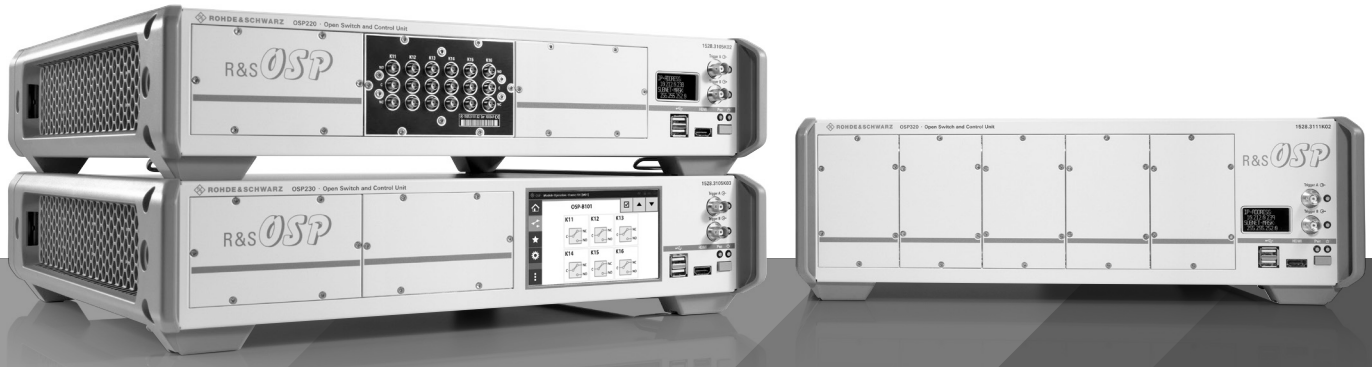
METAF
Electronic Solutions – since 1993

R&S®OSP
OPEN SWITCH AND CONTROL PLATFORM

Specifications



Data Sheet
Version 04.02

ROHDE&SCHWARZ
Make ideas real

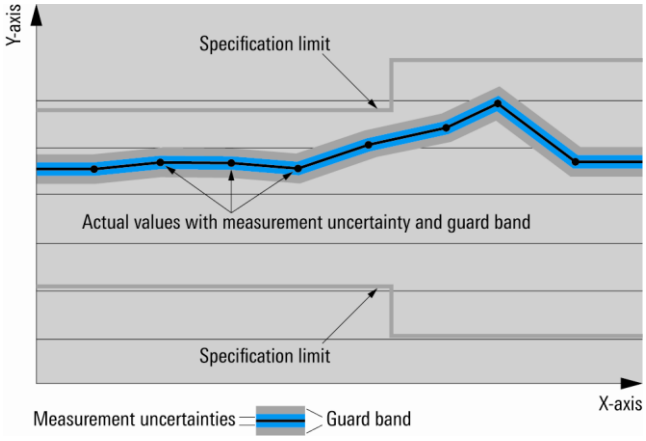
CONTENTS

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 <, ≤, >, ≥, ±, 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 indicated as follows: “parameter: value”.

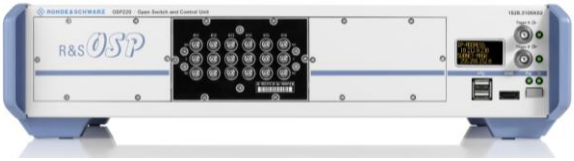
Typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

Introduction

The R&S®OSP is a modular switch and control platform that enables you to perform RF switch and control tasks quickly. The flexibility of the R&S®OSP permits a broad scope of applications ranging from simple RF switch functions to RF wiring of complex systems such as EMC systems.

The following R&S®OSP models are available:

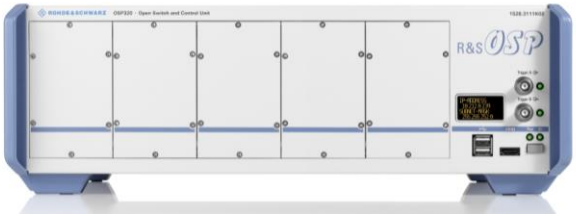
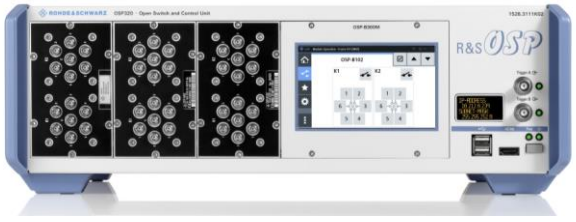
R&S®OSP220

2 RU RF switch and control platform base unit controlled via LAN. It is designed for integration into a test setup as well as for automatic or manual control via a PC application. You can also operate the control platform using an external monitor and a USB keyboard. The R&S®OSP unit can be cascaded via LAN. The R&S®OSP220 has three module slots on the back and on the front of the instrument.	

R&S®OSP230

Manually operable 2 RU RF switch and control platform base unit featuring an integrated touchscreen. It can be used as a standalone, manually operated instrument, or it can be controlled via Ethernet interface in a system or test setup. This interface allows connection to a PC for automatic and manual control via a software application. The R&S®OSP unit can be cascaded via LAN. The R&S®OSP230 has three module slots on the back and two on the front of the instrument.	

R&S®OSP320

3 RU RF switch and control platform base unit controlled via LAN. It is designed for integration into a test setup as well as for automatic or manual control via a PC application. You can also operate the control platform using an external monitor and a USB keyboard. The R&S®OSP unit can be cascaded via LAN. The R&S®OSP320 has five module slots on the back and on the front of the instrument.	
R&S®OSP320 with touchscreen option OSP-B300M and RF modules	

R&S®OSP-B200S2

Satellite box for remote RF switch and control tasks via a serial electrical bus cable or a fiber-optic link (FOL). The R&S®OSP-B200S2 is controlled via the R&S®OSP-B200R remote control module, which can be installed in the R&S®OSP220, R&S®OSP230 or R&S®OSP320. The satellite box has two module slots with reduced depth.	

General data

R&S®OSP units

Interfaces (front panel)		**R&S®OSP220**	**R&S®OSP230**	**R&S®OSP320**	
USB	for keyboard, mouse or USB stick	2	2	2	2 × USB 2.0, type A female connector
HDMI™	for external monitor, resolution 800 × 480 pixel	1	1	1	HDMI™, type A female connector
Touchscreen	for manual operation, resolution 800 × 400 pixel	–	1	1 [1)]	color
External trigger	input and output	2	2	2	BNC
Status display	display of TCP/IP address	1	–	1	b/w
Interfaces (rear panel)					
USB		1	1	1	USB 3.0, type A female connector
LAN	remote control via LAN	1	1	1	Ethernet RJ-45 female connector, 10/100 Mbit/s
Protected memory slot	operating system	1	1	1	microSD card slot
Additional trigger interface	4 bit	–	–	1	D-Sub 9 male

Environmental conditions		
Temperature [2]	operating temperature range	0 °C to +50 °C
	storage temperature range	–25 °C to +70 °C
Damp heat		+40 °C, 90 % rel. humidity, constant, in line with EN 60068-2-30
Height above zero		0 m to 4600 m

Mechanical resistance		
Vibration	sinusoidal	5 Hz to 55 Hz, 0.3 mm amplitude const., 55 Hz to 150 Hz, 0.5 g const., in line with EN 60068-2-6
	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, method no. 516.4, procedure I

Power supply		
Rated voltage		100 V to 240 V AC (± 10 %)
Rated frequency		50 Hz to 60 Hz (± 10 %)
Max. input power		1.5 A to 3.6 A (max. 310 VA)
Rated power	without modules	< 25 W

Dimensions (W × H × D)	R&S®OSP220, R&S®OSP230	444.7 mm × 107.6 mm × 471.9 mm (17.51 in × 4.24 in × 18.58 in)
	for rackmounting (without modules)	1/1 19", 2 RU, depth 425 mm (16.73 in)
	R&S®OSP320	444.7 mm × 152.05 mm × 471.9 mm (17.51 in × 5.99 in × 18.58 in)
	for rackmounting (without modules)	19" 1/1, 3 RU, depth 425 mm (16.73 in)
Weight	R&S®OSP220 (without module)	approx. 6.85 kg (15.1 lb)
	R&S®OSP230 (without module)	approx. 6.95 kg (15.3 lb)
	R&S®OSP320 (without module)	approx. 7.95 kg (17.5 lb)

[1] Optional, R&S®OSP-B300M touchscreen module.

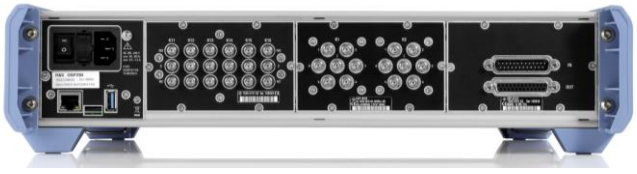
[2] Temperature ranges apply to all base units and R&S®OSP modules (unless a different range is specified for the respective module).

Product conformity		
Electromagnetic compatibility	EU: EMC Directive 2014/30/EC	in line with EN 61326-1 (industrial environment), EN 61326-2-1, EN 55032 (class B), EN 61000-3-2, EN 61000-3-3
Electrical safety	EU: Low Voltage Directive 2014/35/EC	in line with EN 61010-1, VDE certificate no.: 40022952
	USA/Canada	CAN 22.2 No. 61010-1-04, UL 61010-1, $_{c}CSA_{UL}$ certificate no.: 1960595

Module slots

Number of control buses for RF switch and control modules		16
Number of module slots	R&S®OSP220	3 on rear and 3 on front of instrument
	R&S®OSP230	3 on rear and 2 on front of instrument
	R&S®OSP320	5 on rear and 5 on front of instrument or 5 on rear and 3 on front of instrument and 2 slots for R&S®OSP-B300M touchscreen module
Output current	each control bus	max. 800 mA (27 V DC)
	to all control buses	max. 10 A (27 V DC)

Dimensions (W × H × D) of R&S®OSP220 and R&S®OSP230 module slots [3]		
Standard rear module slot	RS01	95.6 mm × 52.6 mm × max. 70 mm (3.76 in × 2.07 in × max. 2.76 in)
Standard front module slot	FS03 (not for R&S®OSP230)	95.6 mm × 52.6 mm × max. 70 mm (3.76 in × 2.07 in × max. 2.76 in)
Standard slots with higher depth	RS02, RS03, FS01, FS02	95.6 mm × 52.6 mm × max. 340 mm (3.76 in × 2.07 in × max. 13.38 in)
Double-width module slot	RS02 to RS03 and FS01 to FS02	204.2 mm × 52.6 mm × max. 340 mm (8.04 in × 2.07 in × max. 13.38 in)
Triple-width module slot	RS01 to RS03; FS01 to FS03 (not for R&S®OSP230)	312.8 mm × 52.6 mm × 70 mm, (12.31 in × 2.07 in × 2.76 in, depth: in parts 340 mm (13.38 in) (FS01 + FS02, RS02 + RS03)



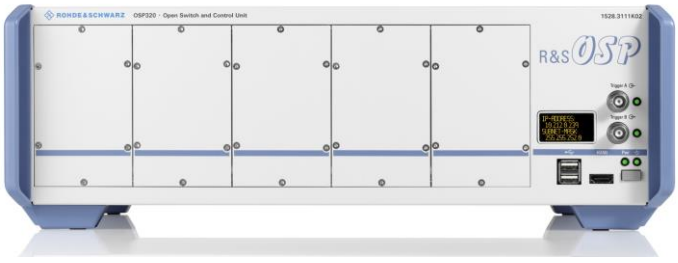
Rear view R&S®OSP220 and R&S®OSP230 units, rear module slots RS01 to RS03 (from left to right) with options

Front view R&S®OSP220, front module slots FS01 to FS03 (from left to right) with one option

[3] No restriction for standard modules on the opposite site.

Dimensions (W × H × D) of R&S®OSP320 [3]		
Module slot on the rear side	RS01	52.6 mm × 95.6 mm × max. 70 mm (2.07 in × 3.76 in × max. 2.76 in)
	RS02	52.6 mm x 95.6 mm × max. 130 mm (2.07 in × 3.76 in × max. 5.11 in)
	RS03 to RS05	52.6 mm × 95.6 mm × max. 340 mm (2.07 in × 3.76 in × max. 13.38 in)
Module slot on the front side	FS01 to FS03	52.6 mm x 95.6 mm × max. 340 mm (2.07 in × 3.76 in × max. 13.38 in)
	FS04, RS05	52.6 mm × 95.6 mm × max. 70 mm (2.07 in × 3.76 in × max. 2.76 in)

Rear view R&S®OSP320, rear module slots RS01 to RS05 (from left to right without options)



Front view R&S®OSP320, front module slots FS01 to FS05 (from left to right without options)

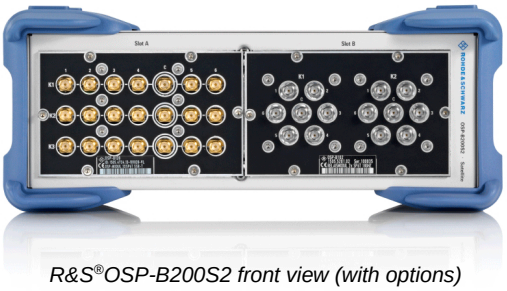
Calibration interval [4]

R&S®OSP220, R&S®OSP230 and R&S®OSP320	without RF modules	no calibration necessary
	with RF modules	3 years or 50 % of switching cycles of the RF relays

[4] Recommended period. No calibration is needed when the R&S®OSP220/230/320 and RF modules are part of a system whose RF paths are regularly calibrated.

R&S®OSP-B200S2 satellite box

Power supply	via R&S®OSP-B200P external power supply or wired link	28 V DC, input
Interface to remote control module	serial electrical bus (wired link)	1 × D-Sub-9 female connector
	fiber-optic link (FOL), optional	1 × SC female connector, simplex
Number of module slots		2 × simple-width, 1 × double-width
Number of module buses		2
Current consumption per module bus		max. 800 mA
Current consumption for both module buses	via serial electrical bus (wired link)	max. 1520 mA (+27 V DC)
	via external power supply (required for FOL)	max. 1600 mA (+28 V DC)
Status indication	power, link/busy, overheat	3 × LEDs
Environmental conditions, mechanical resistance, product conformity		see R&S®OSP base and extension units
Dimensions (W × H × D)	without edge protectors	241 mm × 84 mm × 120 mm (9.5 in × 3.3 in × 4.7 in)
	overall dimensions	265 mm × 109 mm × 150 mm (10.4 in × 4.3 in × 5.9 in)
Module slots (W × D)	simple width (slot A, slot B)	A: 95.6 mm × 105 mm (3.8 in × 4.1 in) B: 95.6 mm × 72 mm (3.8 in × 2.8 in)
	double width (slots A + B)	204.2 mm × 72 mm (8.0 in × 2.8 in)
Weight	without modules	approx. 1.05 kg (2.32 lb)

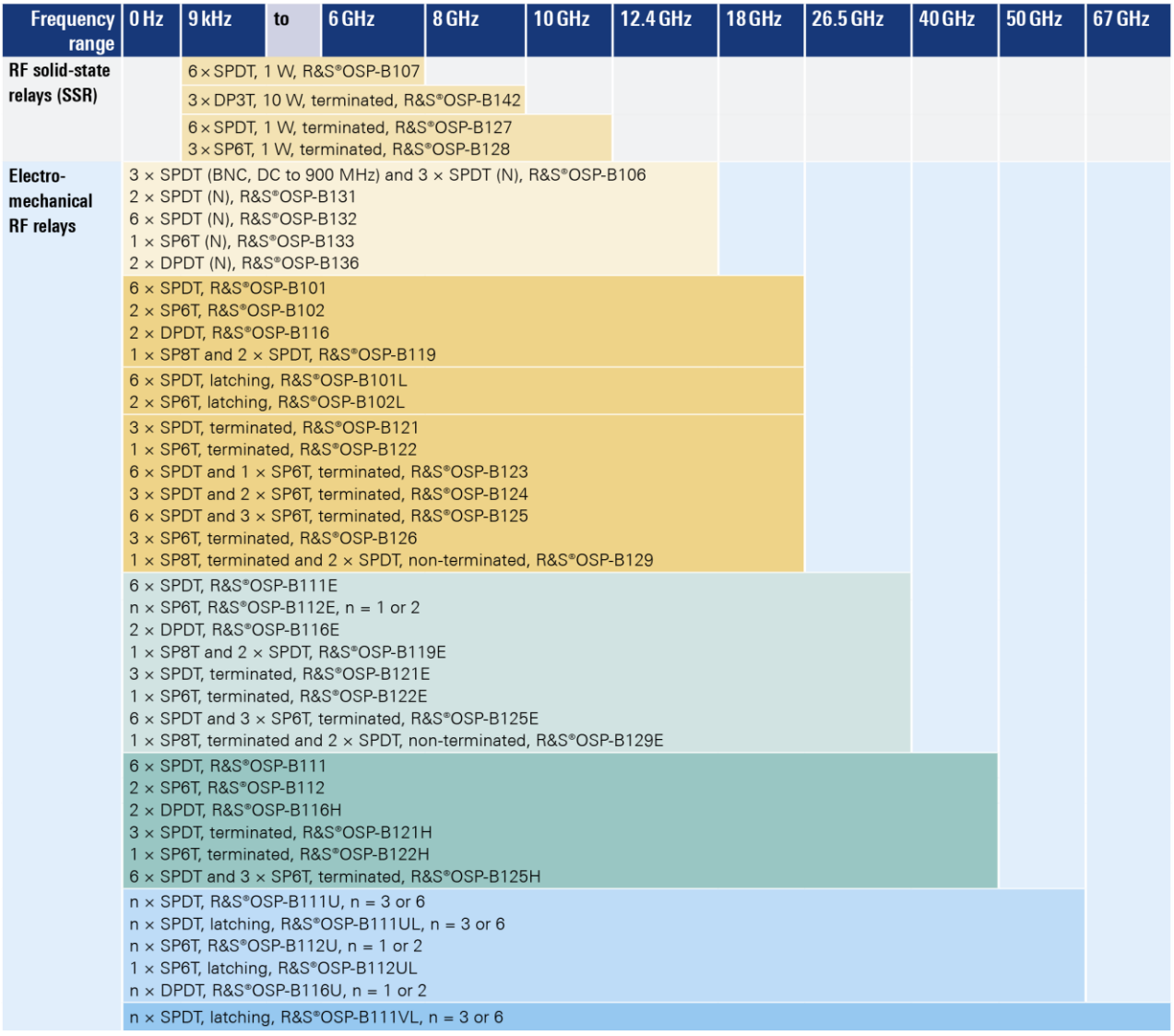


R&S®OSP-B200S2 front view (with options)

R&S®OSP-B200S2 rear view

Overview of modules per frequency [5]

R&S®OSP modules with RF coaxial relays

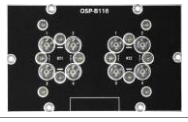
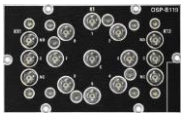
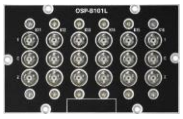


Note: Electromechanical RF relays are failsafe, non-terminated unless otherwise specified (e.g. latching, terminated).

[5] For further modules like digital I/O, multiplexer and system modules see page 17.

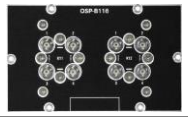
Overview of modules per function

OSP modules with electromechanical RF relays (non-terminated) [6]

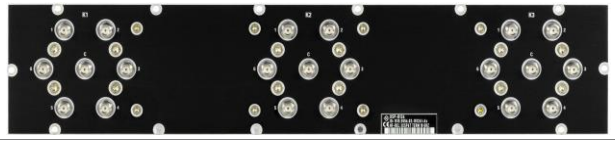
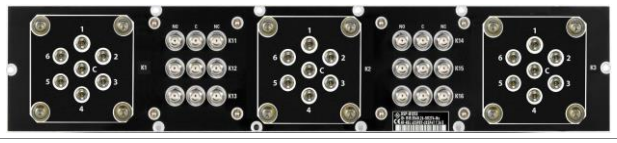
Type	Module designation	View of module width standard module double-width module triple-width module	Buses	Page
RF switch modules up to 18 GHz with SMA connectors, failsafe				
R&S®OSP-B101	RF switch module, 6 × coaxial changeover relays (SPDT), DC to 18 GHz, non-terminated		1	20
R&S®OSP-B102	RF switch module, 2 × coaxial multiposition relays (SP6T), DC to 18 GHz, non-terminated		1	20
R&S®OSP-B116	RF switch module, 2 × RF transfer relays (DPDT), DC to 18 GHz, non-terminated		1	20
R&S®OSP-B119	RF switch module, 1 × coaxial multiposition relays (SP8T), 2 × coaxial changeover relays (SPDT), DC to 18 GHz, non-terminated		1	20
RF switch modules up to 18 GHz with SMA connectors, latching				
R&S®OSP-B101L	RF switch module, 6 × coaxial changeover relays (SPDT), DC to 18 GHz, non-terminated		1	20
R&S®OSP-B102L	RF switch module, 2 × coaxial multiposition relays (SP6T), DC to 18 GHz, non-terminated		1	20
RF switch modules up to 26.5 GHz with SMA [7] connectors, failsafe				
R&S®OSP-B111E	RF switch module, 6 × coaxial changeover relays (SPDT), SMA female connector, DC to 26.5 GHz, non-terminated		1	21
R&S®OSP-B112E	RF switch module, 1 or 2 × coaxial multiposition relays (SP6T), SMA female connector, DC to 26.5 GHz, non-terminated	 *or* 	1	21
R&S®OSP-B116E	RF switch module, 2 × RF transfer relays (DPDT), SMA female connector DC to 26.5 GHz, non-terminated		1	21
R&S®OSP-B119E	RF switch module, 1 × coaxial multiposition relays (SP8T), 2 × coaxial changeover relays (SPDT), DC to 26.5 GHz, non-terminated		1	21

[6] All relay modules contain failsafe (monostable) relays and SMA female connectors unless otherwise designated.

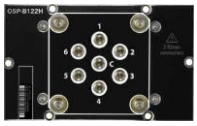
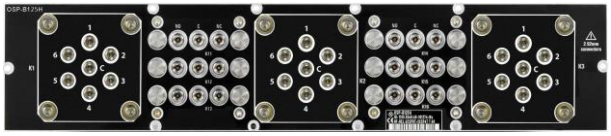
[7] SMA female connectors, compatible to RF cables with 3.5 mm and 2.92 mm male connectors.

Type	Module designation	View of module width standard module double-width module triple-width module	Buses	Page
RF switch modules up to 40 GHz with 2.92 mm connectors, failsafe				
R&S®OSP-B111	RF switch module, 6 × coaxial changeover relays (SPDT), 2.92 mm female connector, DC to 40 GHz, non-terminated		1	21
R&S®OSP-B112	RF switch module, 2 × coaxial multiposition relays (SP6T), 2.92 mm female connector, DC to 40 GHz, non-terminated		1	21
R&S®OSP-B116H	RF switch module, 2 × RF transfer relays (DPDT), 2.92 mm female connector, DC to 40 GHz, non-terminated		1	21
RF switch modules up to 50 GHz with 2.4 mm connectors, failsafe or latching				
R&S®OSP-B111U	RF switch module, 3 or 6 × coaxial changeover relays (SPDT), 2.4 mm female connector, DC to 50 GHz, non-terminated, failsafe	 *or* 	1	23
R&S®OSP-B111UL	RF switch module, 3 or 6 × coaxial changeover relays (SPDT), 2.4 mm female connector, DC to 50 GHz, non-terminated, latching		1	23
R&S®OSP-B112U	RF switch module, 1 or 2 × coaxial multiposition relays (SP6T), 2.4 mm female connector, DC to 50 GHz, non-terminated, failsafe	 *or* 	1	23
R&S®OSP-B112UL	RF switch module, 1 × coaxial multiposition relay (SP6T), 2.4 mm female connector, DC to 50 GHz, non-terminated, latching		1	23
R&S®OSP-B116U	RF switch module, 1 or 2 × RF transfer relays (DPDT), 2.4 mm female connector, DC to 50 GHz, non-terminated, failsafe	 *or* 	1	23
RF switch modules up to 67 GHz with 1.85 mm connectors, latching				
R&S®OSP-B111VL	RF switch module, 3 or 6 × coaxial changeover relays (SPDT), 1.85 mm female connector, DC to 67 GHz, non-terminated, latching	 *or* 	1	24

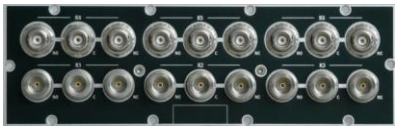
OSP modules with electromechanical RF relays (terminated)

Type	Module designation	View of module width standard module double-width module triple-width module	Buses	Page
RF switch modules up to 18 GHz, terminated, failsafe				
R&S®OSP-B121	RF switch module, 3 × coaxial changeover relays (SPDT), SMA female connectors, DC to 18 GHz, internal termination		1	25
R&S®OSP-B122	RF switch module, 1 × coaxial multiposition relay (SP6T), SMA female connectors, DC to 18 GHz, internal termination		1	25
R&S®OSP-B123	RF switch module, 6 × coaxial changeover relays (SPDT), 1 × coaxial multiposition relays (SP6T), SMA female connectors, DC to 18 GHz, internal termination		2	25
R&S®OSP-B124	RF switch module, 3 × coaxial changeover relays (SPDT), 2 × coaxial multiposition relays (SP6T), SMA female connectors, DC to 18 GHz, internal termination		1	25
R&S®OSP-B125	RF switch module, 6 × coaxial changeover relays (SPDT), 3 × coaxial multiposition relays (SP6T), SMA female connectors, DC to 18 GHz, internal termination		2	25
R&S®OSP-B126	RF switch module, 3 × coaxial multiposition relays (SP6T), SMA female connectors, DC to 18 GHz, internal termination		2	25
R&S®OSP-B129	RF switch module, 1 × coaxial multiposition relays (SP8T), DC to 18 GHz, internal termination 2 × coaxial changeover relays (SPDT), SMA female connectors, DC to 18 GHz, non-terminated		1	26
RF switch modules up to 26.5 GHz, terminated, failsafe				
R&S®OSP-B121E	RF switch module, 3 × coaxial changeover relays (SPDT) terminated (DP3T with external termination), SMA female connectors [7], DC to 26.5 GHz, terminated		1	27
R&S®OSP-B122E	RF switch module, 1 × coaxial multiposition relay (SP6T), SMA female connectors [7], DC to 26.5 GHz, internal termination		1	27
R&S®OSP-B125E	RF switch module, 6 × coaxial changeover relays (SPDT), 3 × coaxial multiposition relays (SP6T), SMA female connectors [7], DC to 26.5 GHz, internal termination		2	27

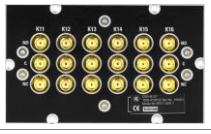
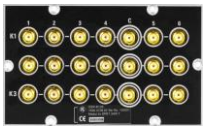
Type	Module designation	View of module width standard module double-width module triple-width module	Buses	Page
R&S®OSP-B129E	RF switch module, 1 × coaxial multiposition relays (SP8T), DC to 18 GHz, internal termination, 2 × coaxial changeover relays (SPDT), SMA female connectors [7], DC to 26.5 GHz, non-terminated		1	28

Type	Module designation	View of module width standard module double-width module triple-width module	Buses	Page
RF switch modules up to 40 GHz, terminated, failsafe				
R&S®OSP-B121H	RF switch module, 3 × coaxial changeover relays (SPDT) terminated (DP3T with external termination), 2.92 mm female connectors, DC to 40 GHz		1	29
R&S®OSP-B122H	RF switch module, 1 × coaxial multiposition relay (SP6T), 2.92 mm female connectors, DC to 40 GHz, internal termination		1	29
R&S®OSP-B125H	RF switch module, 3 × coaxial changeover relays (SPDT) terminated (DP3T with external termination), 3 × coaxial multiposition relays (SP6T), 2.92 mm female connectors, DC to 40 GHz, internal termination		2	29

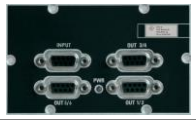
OSP RF switch modules with N connectors up to 12.4 GHz (non-terminated)

Type	Module designation	View of module width standard module double-width module triple-width module	Buses	Page
R&S®OSP-B106	RF switch module, 3 × coaxial changeover relays (SPDT), BNC female connector, DC to 900 MHz, 3 × coaxial changeover relays (SPDT), N female connector, DC to 12.4 GHz		1	30
R&S®OSP-B131	RF switch module, 2 × coaxial changeover relays (SPDT), N female connector, DC to 12.4 GHz		1	30
R&S®OSP-B132	RF switch module, 6 × coaxial changeover relays (SPDT), N female connector, DC to 12.4 GHz		2	30
R&S®OSP-B133	RF switch module, 1 × multiposition relays (SP6T), N female connector, DC to 12.4 GHz		1	30
R&S®OSP-B136	RF switch module, 2 × RF transfer relays (DPDT), N female connector, DC to 12.4 GHz		1	30

OSP RF switch modules with solid-state relays (SSR)

Type	Module designation	View of module width standard module double-width module triple-width module	Buses	Page
R&S®OSP-B107	RF switch module, 6 × coaxial changeover relays (SPDT), SSR, 9 kHz to 6 GHz, SMA, reflective (non-terminated)		1	31
R&S®OSP-B127	RF switch module, 6 × coaxial changeover relays (SPDT), SSR, 9 kHz to 10 GHz, SMA, absorptive (internal termination)		1	31
R&S®OSP-B128	RF switch module, 1 to 3 coaxial multiposition relays (SP6T), SSR, 9 kHz to 10 GHz, SMA, absorptive (internal termination)	 *model .13*	1	31
R&S®OSP-B142	RF switch module, 3 × coaxial changeover relays DP3T reflective power SSR 10 W, 9 kHz to 8 GHz, SMA; alternative version: 1 to 3 × SPDT, absorptive SSR, (reflective DP3T with external termination 1 W)	 or 	1	32

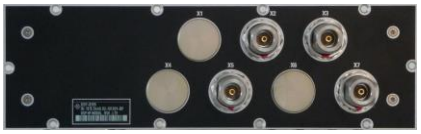
Digital I/O and multiplexer modules

Type	Module designation	View of module width standard module double-width module triple-width module	Buses	Page
R&S®OSP-B103	digital I/O module, 16 × digital inputs, 16 × digital outputs		1	33
R&S®OSP-B108	multiplexer module, 6-channel, 4-wire multiplexer 0 V to 60 V, 30 VA		1	33

Special control modules for RF test systems

Type	Module designation	View of module width standard module double-width module	Buses	Page
R&S®OSP-B104	relay driver module, control of four external RF power relays, additional digital inputs/outputs, interlock		1	34
R&S®OSP-B114	module for compact EMC test systems, RF power relay (DPDT), interlock, digital inputs/outputs		1	34
R&S®OSP-B200R	remote control module for R&S®OSP-B200S2 satellite box; connection via copper cable or optionally via fiber-optic link (FOL)		up to 2	9
R&S®OSP-PM-I	passive module for integration of one R&S®NRP-Zxx power sensor (N feedthrough female connector and USB feedthrough filter)		–	35

Special modules for Rohde & Schwarz test systems

Type	Module designation	View of module width	See document
		standard module double-width module triple-width module	
R&S®OSP-B151x	modules for R&S®TS8991 (OTA test system): • R&S®OSP-B151, with basic OTA functionality • R&S®OSP-B151M, 2 × ampl. • R&S®OSP-B151S, 1 × ampl.	 *R&S®OSP-B151M*	PD 3607.1242.32 (data sheet)
R&S®OSP-B155G	module for R&S®TS8996 (RSE test system for 3G, LTE and 5G)	 *R&S®OSP-B155G*	1518.1039.02 (manual)
R&S®OSP -B157W8 Plus [8]	basic module for R&S®TS8997 (synchronized multichannel high-resolution power meter and switching module)	 *R&S®OSP-B157W8 Plus*	PD 5215.3085.22 (data sheet)
R&S®OSP -B157WX [9]	extension module for R&S®TS8997 (measurements relating to electromagnetic compatibility and radio spectrum matters (ERM) up to 40 GHz)	 *R&S®OSP-B157WX*	

[8] R&S®OSP-B157W8 Plus for R&S®OSP150.

[9] R&S®OSP-B157WX for R&S®OSP120 or R&S®OSP220.

Overview of modules per number – rules for integration [10]

Module name	Order No.	Buses	No. of slots	Number of modules (front or rear side; front + rear side)				Opening of R&S®OSP is required
				R&S®OSP220 max. 3 + 3	R&S®OSP230 max. 2 + 3	R&S®OSP320 max. 5 + 5	Satellite max. 2	
R&S®OSP-B101	1505.5101.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B101L	1505.5101.52	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B102	1505.5201.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B102L	1505.5201.52	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B103	1505.5301.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B104	1505.5401.02	1	1	2 or 2; 1 + 1	2 or 2; 1 + 1	2 or 2; 1 + 1	–	●
R&S®OSP-B106	1505.5601.02	1	2	1 + 1	1 + 1	–	–	●
R&S®OSP-B107	1505.5901.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B108	1505.5718.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B111E	1505.4605.26	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B111	1505.4605.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B111U	1515.4605.53	1	1	3 + 3	2 + 3	5 + 5	2	–
	1515.4605.56							
R&S®OSP-B111UL	1528.1531.13	1	1	3 + 3	2 + 3	5 + 5	2	–
	1528.1531.16							
R&S®OSP-B111VL	1515.5991.13	1	1	3 + 3	2 + 3	5 + 5	2	–
	1515.5991.16							
R&S®OSP-B112E	1528.1560.11	1	1	3 + 3	2 + 3	5 + 5	2	–
	1528.1560.12							
R&S®OSP-B112	1505.4611.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B112U	1528.1560.51	1	1	3 + 3	2 + 3	5 + 5	2	–
	1528.1560.52							
R&S®OSP-B112UL	1528.1548.11	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B114	1505.4711.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B116	1515.5827.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B116E	1528.5827.26	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B116H	1515.5827.40	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B116U	1515.5827.51	1	1	3 + 3	2 + 3	5 + 5	2	–
	1515.5827.52							
R&S®OSP-B119	1515.5856.02	1	1	3 + 3	2 + 3	4 + 4	2	–
R&S®OSP-B119E	1515.5856.26	1	1	3 + 3	2 + 3	4 + 4	2	–
R&S®OSP-B121	1515.5504.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B121E	1515.5504.26	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B121H	1515.5504.40	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B122	1515.5510.02	1	1	3 + 3	2 + 3	4 + 4	2	–
R&S®OSP-B122E	1515.1525.26	1	1	3 + 3	2 + 3	4 + 4	2	–
R&S®OSP-B122H	1528.1525.02	1	1	3 + 3	2 + 3	4 + 4	2	–
R&S®OSP-B123	1515.5527.02	2	2	1 + 1	1 + 1	–	1	–
R&S®OSP-B124	1515.5533.02	1	2	1 + 1	1 + 1	–	1	–
R&S®OSP-B125	1515.5540.0	2	3	1 + 1	0 + 1	–	–	–
R&S®OSP-B125E	1515.5540.26	2	3	1 + 1	0 + 1	–	–	–
R&S®OSP-B125H	1515.5540.40	2	3	1 + 1	0 + 1	–	–	–
R&S®OSP-B126	1515.5556.02	2	3	1 + 1	0 + 1	–	–	–
R&S®OSP-B127	1505.4728.02	1	1	3 + 3	2 + 3	5 + 5	2	–

[10] Restrictions are highlighted in light gray; combinations which are not possible are highlighted in dark gray.

Module name	Order No.	Buses	No. of slots	Number of modules (front or rear side; front + rear side)				Opening of R&S®OSP is required
				R&S®OSP220 max. 3 + 3	R&S®OSP230 max. 2 + 3	R&S®OSP320 max. 5 + 5	Satellite max. 2	
R&S®OSP-B128	1505.4734.11 1505.4734.12 1505.4734.13	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B129	1517.7004.02	1	1	3 + 3	2 + 3	4 + 4	2	–
R&S®OSP-B129E	1517.7004.26	1	1	3 + 3	2 + 3	4 + 4	2	–
R&S®OSP-B131	1505.4740.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B132	1505.4757.02	2	2	1 + 1	1 + 1	–	1	–
R&S®OSP-B133	1528.3157.02	1	1	3 + 3	2 + 3	4 + 4	2	–
R&S®OSP-B136	1522.4500.02	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-B142	1505.4792.03 1505.4792.11 1505.4792.12 1505.4792.13	1	1	3 + 3	2 + 3	5 + 5	2	–
R&S®OSP-PM-I	1515.5985.02	/	1	2 + 2	2 + 2	3 + 3	–	–
Remote control module for R&S®OSP-B200S2 satellite box								
R&S®OSP-B200R	1528.3140.02 1528.3140.04	up to 2	1	3 + 3	2 + 3	5 + 5 (max. 8)	–	–
Module panels for RF feedthroughs								
R&S®OSP-B011	1505.4763.02	/	1	3 + 3	2 + 3	5 + 5	–	●
R&S®OSP-B012	1505.4770.02	/	1	3 + 3	2 + 3	5 + 5	–	●
Special modules for Rohde & Schwarz test systems								
R&S®OSP-B151x	see data sheets of the test system	2	2	1	1	–	–	●
R&S®OSP-B155G		2	2	1	1	–	–	●
R&S®OSP -B157W8 Plus [8]		/	2	–	–	–	–	●
R&S®OSP-B157WX [9]		1	2	1	–	–	–	●
R&S®OSP-B157WN		1	2	1	1	–	–	●
Touchscreen module for R&S®OSP320								
R&S®OSP-B300M	1528.3128.02	/	2	–	–	1	–	●

Module specifications

Universal RF switch modules, failsafe/latching, non-terminated

DC to 18 GHz: R&S®OSP-B101/-B101L/-B102/-B102L/-B116 (SPDT, DPDT, SP6T)

Parameter	R&S®OSP-B101	R&S®OSP-B101L	R&S®OSP-B102	R&S®OSP-B102L	R&S®OSP-B116
Number of relays	6 × SPDT		2 × SP6T		2 × DPDT
Relay type	failsafe	latching	failsafe (normally open)	latching	failsafe
	coaxial relay				
Connector type	SMA female				
Relay impedance	50 Ω				
Frequency range	DC to 18 GHz				
Switching time (nominal) [11]	< 10 ms		< 15 ms	< 40 ms	< 15 ms
Number of switching cycles [11]	10 million		5 million per position		2.5 million
Current consumption (module)	max. 600 mA (+27 V DC)	max. 480 mA (+27 V DC) [12]	max. 200 mA (+27 V DC)	max. 700 mA (+27 V DC) [13]	max. 300 mA (+27 V DC)
Dimensions (W × H)	107.6 mm × 65.5 mm (4.24 in × 2.58 in), standard width				
Dimensions (D)	59.7 mm (2.35 in)	75.6 mm (2.89 in)	59.7 mm (2.35 in)	76.3 mm (3 in)	76.5 mm (3.01 in)
Slot position	without restrictions				
Weight	approx. 0.4 kg (0.88 lb)		approx. 0.5 kg (1.10 lb)		approx. 0.2 kg (0.44 lb)

RF characteristics

Type	Parameter	DC to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz	12.4 GHz to 18 GHz
SPDT, DPDT, SP6T	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50
	insertion loss	< 0.5 dB/ ≤ 0.20 dB [11]	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.7 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB
	average power [11, 14]	240 W	150 W	120 W	100 W

DC to 18 GHz: R&S®OSP-B119 (mixed RF switch module SP8T and 2 × SPDT)

Parameter	R&S®OSP-B119	
Number and type of relays	1 × SP8T (non-terminated)	2 × SPDT (non-terminated)
Relay type	failsafe (normally open)	failsafe
	coaxial relays	
Connector type	SMA female	
Relay impedance	50 Ω	
Frequency range	DC to 18 GHz	
Switching time	SP8T: 15 ms	SPDT: 10 ms
Current consumption (module)	max. 300 mA (+27 V DC)	
Dimensions (W × H × D)	107.6 mm × 65.5 mm × 76.5 mm (4.24 in × 2.58 × 3.01 in)	
Slot position	with restrictions, see table rules for integration on page 18	
Weight	approx. 0.4 kg (0.88 lb)	

RF characteristics

Type	Parameter	DC to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz	12.4 GHz to 16 GHz	16 GHz to 18 GHz
SP8T	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.60
	insertion loss	< 0.5 dB/ ≤ 0.20 dB [11]	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.7 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.5 dB [11]	< 0.7 dB/ ≤ 0.5 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 60 dB
	average power [11, 14]	240 W	150 W	120 W	100 W	100 W
	number of switching cycles [11]	2 million per position				
SPDT		see SPDT relay of module R&S®OSP-B101				

[11] Nominal values specified by the relay manufacturer at +25 °C.

[12] Only during changeover.

[13] Only during a reset.

[14] Cold switching.

DC to 26.5 GHz: R&S®OSP-B111E/-B112E/-B116E/-B119E (SPDT, SP6T, DPDT, SP8T)

Parameter	R&S®OSP-B111E	R&S®OSP-B112E	R&S®OSP-B116E	R&S®OSP-B119E
Number of relays	6 × SPDT	1 or 2 × SP6T	2 × DPDT	1 × SP8T + 2 × SPDT
Relay type	coaxial relay			
Connector type	SMA, female, compatible to 3.5 mm and 2.92 mm RF cable			
Relay impedance	50 Ω			
Frequency range	DC to 26.5 GHz			
Switching time (nominal) [11]	< 10 ms	< 15 ms	< 15 ms	< 15 ms
Number of switching cycles [11]	5 million per position			
Current consumption (+27 V DC)/module	max. 105 mA [13]	max. 105 mA or 210 mA [13]	max. 140 mA [13]	max. 315 mA [13]
Dimensions (W × H)	107.6 mm × 65.5 mm (4.24 in × 2.58 in), standard width			
Dimensions (D)	69.2 mm (2.72 in)			
Slot position	without restrictions			
Weight	approx. 0.4 kg (0.88 lb)			

RF characteristics

Type	Parameter	DC to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz	12.4 GHz to 18 GHz	18 GHz to 26.5 GHz
SPDT, failsafe	VSWR [11]	≤ 1.10	≤ 1.20	≤ 1.20	≤ 1.40	≤ 1.40
	insertion loss	< 0.35 dB/ ≤ 0.15 dB [11]	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.45 dB/ ≤ 0.25 dB [11]	< 0.55 dB/ ≤ 0.35 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]
	isolation [11]	≥ 80 dB	≥ 75 dB	≥ 65 dB	≥ 60 dB	≥ 55 dB
	average power [11, 14]	240 W	150 W	120 W	100 W	40 W
SP6T, failsafe (normally open) and DPDT, failsafe	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70
	insertion loss	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.6 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 0.9 dB/ ≤ 0.70 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 50 dB
	average power [11, 14]	240 W	150 W	120 W	100 W	40 W

Type	Parameter	DC to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz	12.4 GHz to 16 GHz	16 GHz to 18 GHz	18 GHz to 22 GHz	22 GHz to 26.5 GHz
SP8T, failsafe (normally open)	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.60	≤ 1.70	≤ 2.00
	insertion loss (dB)	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.6 dB/ ≤ 0.40 dB [11]	<0.75/ ≤ 0.55 [11]	< 0.8/ ≤ 0.60 [11]	< 0.9/ ≤ 0.70 [11]	< 1.3/ ≤ 1.1 [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB
	average power [11, 14]	240 W	150 W	120 W	110 W	100 W	90 W	40 W

DC to 40 GHz: R&S®OSP-B111/-B112/-B116H (SPDT, SP6T, DPDT)

Parameter	**R&S®OSP-B111(H)**	**R&S®OSP-B112(H)**	**R&S®OSP-B116H**
Relay type	6 × SPDT	2 × SP6T	2 × DPDT
	coaxial relay		
Connector type	2.92 mm, K female		
Relay impedance	50 Ω		
Frequency range	DC to 40 GHz		
Switching time (nominal) [11]	< 10 ms	< 15 ms	< 15 ms
Number of switching cycles [11]	5 million	2 million per position	2.5 million
Current consumption (module)	max. 600 mA (+27 V DC)	max. 200 mA (+27 V DC)	Max. 300 mA (+27 V DC)
Dimensions (W × H)	107.6 mm × 65.5 mm (4.24 in × 2.58 in), standard width		
Dimensions (D)	59.7 mm (2.35 in)	69.5 mm (2.74 in)	77.5 mm (3.05 in)
Slot position	without restrictions		
Weight	approx. 0.4 kg (0.88 lb)		

RF characteristics

Type	**Parameter**		**DC to 6 GHz**	**6 GHz to 12.4 GHz**	**12.4 GHz to 18 GHz**	**18 GHz to 26.5 GHz**	**26.5 GHz to 40 GHz**
SPDT, DPDT, failsafe	VSWR [11]		≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70	≤ 1.90
	insertion loss		< 0.5 dB/ ≤ 0.30 dB [11]	< 0.7 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 1.0 dB/ ≤ 0.70 dB [11]	< 1.0 dB/ ≤ 0.80 dB [11]
	isolation [11]		≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB	≥ 50 dB
	average power [11, 14]	SPDT	80 W	60 W	50 W	30 W	10 W
		DPDT				20 W	
SP6T, failsafe (normally open)	VSWR [11]		≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70	≤ 2.20
	insertion loss		< 0.5 dB/ ≤ 0.20 dB [11]	< 0.7 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 1.0 dB/ ≤ 0.70 dB [11]	< 1.1 dB/ ≤ 1.10 dB [11]
	isolation [11]		≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB	≥ 50 dB
	average power [11, 14]		40 W	30 W	25 W	15 W	5 W

DC to 50 GHz: R&S®OSP-B111U/-B112U/-B116U (SPDT, SP6T, DPDT)

Parameter	R&S®OSP-B111U	R&S®OSP-B112U	R&S®OSP-B116U
Relay type	3 or 6 × SPDT	1 or 2 × SP6T	1 or 2 × DPDT
	coaxial relay		
Connector type	2.4 mm female		
Relay impedance	50 Ω		
Frequency range	DC to 50 GHz		
Switching time (nominal) [11]	< 10 ms	< 15 ms	< 15 ms
Number of switching cycles [11]	2 million	2 million per position	2 million
Current consumption, +27 V DC (module)	max. 105 mA or 210 mA	max. 105 mA or 210 mA	max. 140 mA or 280 mA
Dimensions (W × H)	107.6 mm × 65.5 mm (4.24 in × 2.58 in), standard width		
Dimensions (D)	75 mm (2.95 in)	69.2 mm (2.72 in)	
Slot position	without restrictions		
Weight	approx. 0.4 kg (0.88 lb)		

RF characteristics

Type	Parameter	DC to 6 GHz	6 GHz to 12.4 GHz	12.4 GHz to 18 GHz	18 GHz to 26.5 GHz	26.5 GHz to 40 GHz	40 GHz to 50 GHz
SPDT/DPDT, failsafe	VSWR [11]	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70	≤ 1.90	≤ 1.90
	insertion loss	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.6 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 0.9 dB/ ≤ 0.70 dB [11]	< 1.0 dB/ ≤ 0.80 dB [11]	< 1.3 dB/ ≤ 1.10 dB [11]
	isolation [11]	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB	≥ 50 dB	≥ 50 dB
	average power [11, 14]	80 W	60 W	50 W	20 W	10 W	5 W
SP6T, failsafe (normally open)	VSWR [11]	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70	≤ 1.90	≤ 2.20
	insertion loss	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.6 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 0.9 dB/ ≤ 0.70 dB [11]	< 1.1 dB/ ≤ 0.90 dB [11]	< 1.4 dB/ ≤ 1.20 dB [11]
	isolation [11]	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB	≥ 50 dB	≥ 50 dB
	average power [11, 14]	40 W	30 W	25 W	15 W	5 W	3 W

DC to 50 GHz: R&S®OSP-B111UL/-B112UL (SPDT, SP6T), latching

Parameter	R&S®OSP-B111UL	R&S®OSP-B112UL
Relay type	3 or 6 × SPDT, coaxial relay	1 × SP6T, coaxial relay
Connector type	2.4 mm female	
Relay impedance	50 Ω	
Frequency range	DC to 50 GHz	
Switching time (nominal) [11]	< 10 ms	< 40 ms
Number of switching cycles [11]	2 million	2 million per position
Current consumption, +27 V DC (module)	3 relays: max 240 or 480 mA [12]	max. 750 mA [13]
Dimensions (W × H)	107.6 mm × 65.5 mm (4.24 in × 2.58 in), standard width	
Dimensions (D)	75 mm (2.95 in)	69.2 mm (2.72 in)
Slot position	without restrictions	
Weight	approx. 0.4 kg (0.88 lb)	

RF characteristics

Type	Parameter	DC to 6 GHz	6 GHz to 12.4 GHz	12.4 GHz to 18 GHz	18 GHz to 26.5 GHz	26.5 GHz to 40 GHz	40 GHz to 50 GHz
SPDT/DPDT, latching	VSWR [11]	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70	≤ 1.90	≤ 1.90
	insertion loss	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.7 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 1.0 dB/ ≤ 0.70 dB [11]	< 1.0 dB/ ≤ 0.80 dB [11]	< 1.1 dB/ ≤ 1.10 dB [11]
	isolation [11]	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB	≥ 50 dB	≥ 50 dB
	average power [11, 14]	80 W	60 W	50 W	20 W	10 W	5 W
SP6T, latching,	VSWR [11]	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70	≤ 1.90	≤ 2.20
	insertion loss	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.6 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 0.9 dB/ ≤ 0.70 dB [11]	< 1.1 dB/ ≤ 0.90 dB [11]	< 1.4 dB/ ≤ 1.20 dB [11]
	isolation [11]	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB	≥ 50 dB	≥ 50 dB
	average power [11, 14]	40 W	30 W	25 W	15 W	5 W	3 W

DC to 67 GHz: R&S®OSP-B111VL (SPDT), latching

Parameter	R&S®OSP-B111VL
Relay type	3 or 6 × SPDT, coaxial relay
Connector type	1.85 mm female
Relay impedance	50 Ω
Frequency range	DC to 67 GHz
Switching time (nominal) [11]	< 15 ms
Number of switching cycles [11]	0.6 million
Current consumption (module)	3 relays max 300 mA [12] 6 relays max. 600 mA [12] (+27 V DC)
Dimensions (W × H)	107.6 mm × 65.5 mm (4.24 in × 2.58 in), standard width
Dimensions (D)	72 mm (2.83 in)
Slot position	without restrictions
Weight	ca. 0.35 kg (0.77 lb)

RF characteristics

Type	Parameter	DC to 6 GHz	6 GHz to 12.4 GHz	12.4 GHz to 18 GHz	18 GHz to 26.5 GHz	26.5 GHz to 40 GHz	40 GHz to 50 GHz	50 GHz to 67 GHz
SPDT, latching	VSWR [11]	≤ 1.20	≤ 1.25	≤ 1.30	≤ 1.70	≤ 1.90	≤ 1.90	≤ 1.90
	insertion loss	< 0.6 dB/ ≤ 0.45 dB [11]	< 0.7 dB/ ≤ 0.56 dB [11]	< 0.8 dB/ ≤ 0.68 dB [11]	< 0.9 dB/ ≤ 0.8 dB [11]	< 1.0 dB/ ≤ 0.91 dB [11]	< 1.1 dB/ ≤ 0.99 dB [11]	< 1.2 dB/ ≤ 1.12 dB [11]
	isolation [11]	≥ 90 dB	≥ 85 dB	≥ 75 dB	≥ 70 dB	≥ 70 dB	≥ 65 dB	≥ 60 dB
	average power [11, 14]	23 W	16 W	14 W	12 W	6 W	3 W	1 W

Universal RF switch modules, terminated

DC to 18 GHz: R&S®OSP-B121/-B122 (SPDT, SP6T)

Parameter	R&S®OSP-B121	R&S®OSP-B122
Number and type of relays	3 × SPDT	1 × SP6T
Relay type	coaxial relays, SMA female	
Frequency range	DC to 18 GHz	
Relay impedance	50 Ω	
Termination impedance	50 Ω, 1 W per termination	
Max. termination power per relay	SPDT: 1 W	SP6T: 3 W
Switching time (nominal)	SPDT: 10 ms	SP6T: 15 ms
Current consumption (module)	max. 675 mA (+27 V DC)	max. 115 mA (+27 V DC)
Dimensions (W × H × D)	107.6 mm × 65.5 mm × 70.8 mm (4.23 in × 2.58 in × 2.79 in)	
Slot position	without restrictions	with restrictions, see table on page 18
Weight	approx. 0.4 kg (0.88 lb)	approx. 0.3 kg (0.66 lb)

DC to 18 GHz: R&S®OSP-B123/-B124 (mixed modules with SPDT and SP6T)

Parameter	R&S®OSP-B123	R&S®OSP-B124
Number and type of relays	6 × SPDT, 1 × SP6T	3 × SPDT, 2 × SP6T
Relay type	coaxial relays, SMA female	
Frequency range	DC to 18 GHz	
Relay impedance	50 Ω	
Termination impedance	50 Ω, 1 W per termination	
Max. termination power per relay	SPDT: 1 W	SP6T: 3 W
Switching time (nominal)	SPDT: 10 ms	SP6T: 15 ms
Current consumption (module)	max. 1460 mA (+27 V DC)	max. 900 mA (+27 V DC)
Dimensions (W × H × D)	216.2 mm × 65.5 mm × 70.8 mm (8.51 in × 2.58 in × 2.79 in) (double-width modules)	
Slot position	with restrictions, see table rules for integration on page 18	
Weight	approx. 0.9 kg (1.98 lb)	approx. 0.8 kg (1.76 lb)

DC to 18 GHz: R&S®OSP-B125/-B126

Parameter	R&S®OSP-B125	R&S®OSP-B126
Number and type of relays	6 × SPDT, 3 × SP6T	3 × SP6T
Relay type	coaxial relays, SMA female	
Frequency range	DC to 18 GHz	
Relay impedance	50 Ω	
Termination impedance	50 Ω, 1 W per termination	
Max. termination power per relay	SPDT: 1 W	SP6T: 3 W
Switching time (nominal)	SPDT: 10 ms	SP6T: 15 ms
Current consumption (module)	max. 1685 mA (+27 V DC)	max. 345 mA (+27 V DC)
Dimensions (W × H × D)	324.8 mm × 65.5 mm × 70.8 mm (12.79 in × 2.58 in × 2.79 in) (triple-width modules)	
Slot position	with restrictions, see table rules for integration on page 18	
Weight	approx. 1.4 kg (3.08 lb)	approx. 0.9 kg (1.98 lb)

RF characteristics

Type	Parameter	DC to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz	12.4 GHz to 18 GHz
SPDT, terminated, failsafe	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50
	insertion loss	< 0.5 dB/≤ 0.20 dB [11]	< 0.5 dB/≤ 0.30 dB [11]	< 0.7 dB/≤ 0.40 dB [11]	< 0.7 dB/≤ 0.50 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB
	average power [11, 14]	240 W	150 W	120 W	100 W
	number of switching cycles [11]	2 million			
SP6T, terminated, failsafe (normally open)	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50
	insertion loss	< 0.5 dB/ ≤ 0.20 dB [11]	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.7 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB
	average power [11, 14]	240 W	150 W	120 W	100 W
	number of switching cycles [11]	2 million per position			

DC to 18 GHz: R&S®OSP-B129 (mixed RF switch module, term. SP8T and non-term. SPDT)

Parameter	**R&S®OSP-B129**	
Number and type of relays (type of termination)	1 × SP8T (terminated)	2 × SPDT (non-terminated)
Relay type	coaxial relay, SMA female	
Frequency range	DC to 18 GHz	
Relay impedance	50 Ω	
Max. termination power	50 Ω, 1 W per termination	–
Max. termination per relay	max. 3 W	–
Switching time (nominal) [11]	SP8T: 15 ms	SPDT: 10 ms
Current consumption (module)	max. 400 mA (+27 V DC)	
Dimensions (W × H × D)	107.6 mm × 65.5 mm × 70.8 mm (4.24 in × 2.58 in × 2.79 in), standard width	
Slot position	with restrictions, see table rules for integration on page 18	
Weight	approx. 0.4 kg (0.88 lb)	

RF characteristics

Type	**Parameter**	**DC to 3 GHz**	**3 GHz to 8 GHz**	**8 GHz to 12.4 GHz**	**12.4 GHz to 16 GHz**	**16 GHz to 18 GHz**
SP8T, failsafe (normally open)	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.60
	insertion loss	≤ 0.4 dB/ ≤ 0.20 dB [11]	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.6 dB/ ≤ 0.4 dB [11]	< 0.7 dB/ ≤ 0.5 dB [11]	< 0.7 dB/ ≤ 0.5 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 60 dB
	average power [11, 14]	240 W	150 W	120 W	100 W	100 W
	number of switching cycles [11]	2 million per position				
SPDT, failsafe		see SPDT relay of module R&S®OSP-B101				

DC to 26.5 GHz: R&S®OSP-B121E/-B122E (SPDT, SP6T)

Parameter	R&S®OSP-B121E	R&S®OSP-B122E
Number and type of relays	3 × SPDT, terminated (DP3T with external termination)	1 × SP6T, terminated
Relay type	coaxial relay, 2.92 mm; K female	
Frequency range	DC to 26.5 GHz	
Relay impedance	50 Ω	
Termination impedance	50 Ω (ext.)	50 Ω (intern)
Max. termination power	1 W, external termination	1 W per termination, 3 W per relay
Switching time (nominal) [11]	10 ms	10 ms
Current consumption (module)	max. 675 mA (+27 V DC)	max. 120 mA (+27 V DC)
Dimensions (W × H × D)	107.6 mm × 65.5 mm × 88.0 mm (4.24 in × 2.58 in × 3.46 in)	107.6 mm × 65.5 mm × 79.4 mm (4.24 in × 2.58 in × 3.13 in)
Slot position	without restrictions	with restrictions, see table on page 18
Weight	approx. 0.35 kg (0.77 lb)	approx. 0.3 kg (0.66 lb)

DC to 26.5 GHz: R&S®OSP-B125E (mixed RF switch module, SPDT and SP6T)

Parameter	R&S®OSP-B125E
Number and type of relays	6 × SPDT, terminated (DP3T with external termination); 3 × SP6T, terminated
Relay type	coaxial relays, SMA female, compatible to 3.5 mm and 2.92 mm cable
Frequency range	DC to 26.5 GHz
Relay impedance	50 Ω
Termination impedance	50 Ω, 1 W per termination
Max. termination power per relay	SPDT: 1 W, SP6T: 3W
Switching time (nominal)	10 ms
Current consumption (module)	max. 1685 mA (+27 V DC)
Dimensions (W × H × D)	324.8 mm × 65.5 mm × 70.8 mm (12.79 in × 2.58 in × 2.79 in) (triple-width module)
Slot position	with restrictions, see table rules for integration on page 18
Weight	approx. 1.4 kg (3.08 lb)

RF characteristics

Type	Parameter	DC to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz	12.4 GHz to 18 GHz	18 GHz to 26.5 GHz
SPDT, failsafe	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70
	insertion loss	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.6 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 0.9 dB/ ≤ 0.70 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB
	average power [11, 14]	240 W	150 W	120 W	100 W	40 W
	number of switching cycles [11]	2 million				
SP6T, failsafe (normally open)	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.7/1.90 [11]
	insertion loss	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.6 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 0.9 dB/ ≤ 0.70 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 50 dB
	average power [11, 14]	240 W	150 W	120 W	100 W	40 W
	number of switching cycles [11]	2 million per position				

DC to 26.5 GHz: R&S®OSP-B129E (mixed RF switch module, 1 × SP8T and 2 × SPDT)

Parameter	R&S®OSP-B129E	
Number and type of relays	1 × SP8T (terminated)	2 × SPDT (non-terminated)
Relay type	coaxial relays, SMA female, compatible to 3.5 mm and 2.92 mm cable	
Relay impedance	50 Ω	
Frequency range	DC to 26.5 GHz	
Switching time	SP8T: 15 ms	SPDT: 10 ms
Number of switching cycles	2 million per position	10 million cycles
Current consumption (module)	max. 310 mA (+27 V DC)	
Dimensions (W × H × D)	107.6 mm × 65.5 mm × 76.5 mm (4.24 in × 2.58 × 3.01 in)	
Slot position	with restrictions, see table rules for integration on page 18	
Weight	approx. 0.4 kg (0.88 lb)	

RF characteristics

Type	Parameter	DC to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz	12.4 GHz to 18 GHz	18 GHz to 26.5 GHz
SPDT, failsafe, non-terminated	VSWR [11]	≤ 1.10	≤ 1.20	≤ 1.20	≤ 1.40	≤ 1.50
	insertion loss	< 0.35 dB/ ≤ 0.15 dB [11]	< 0.40 dB/ ≤ 0.20 dB [11]	< 0.45 dB/ ≤ 0.25 dB [11]	< 0.65 dB/ ≤ 0.35 dB [11]	< 0.70 dB/ ≤ 0.50 dB [11]
	isolation [11]	≥ 80 dB	≥ 75 dB	≥ 65 dB	≥ 60 dB	≥ 55 dB
	average power [11, 14]	240 W	150 W	120 W	100 W	40 W

Type	Parameter	DC to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz	12.4 GHz to 1 GHz	16 GHz to 18 GHz	18 GHz to 22 GHz	22 GHz to 26.5 GHz
SP8T, failsafe (normally open), terminated	VSWR [11]	≤ 1.20	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.60	≤ 1.70	≤ 2.00
	insertion loss	< 0.40 dB/ ≤ 0.20 dB [11]	< 0.50 dB/ ≤ 0.30 dB [11]	< 0.60 dB/ ≤ 0.40 dB [11]	< 0.75 dB/ ≤ 0.55 dB [11]	< 0.80 dB/ ≤ 0.60 dB [11]	< 0.90 dB/ ≤ 0.70 dB [11]	< 1.30 dB/ ≤ 1.10 dB [11]
	isolation [11]	≥ 80 dB	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB
	average power [11, 14]	240 W	150 W	120 W	110 W	100 W	90 W	40 W

DC to 40 GHz: R&S®OSP-B121H/-B122H/-B125H (SPDT, SP6T)

Parameter	R&S®OSP-B121H	R&S®OSP-B122H
Number and type of relays	3 × SPDT, terminated (DP3T with external termination)	1 × SP6T, terminated
Relay type	coaxial relay, 2.92 mm; K female	
Frequency range	DC to 40 GHz	
Relay impedance	50 Ω	
Termination impedance	50 Ω (ext.)	50 Ω (intern)
Max. termination power	1 W per termination	1 W per termination, 3 W per relay
Switching time (nominal) [11]	10 ms	10 ms
Current consumption (module)	max. 675 mA (+27 V DC)	max. 120 mA (+27 V DC)
Dimensions (W × H × D)	107.6 mm × 65.5 mm × 88.0 mm (4.24 in × 2.58 in × 3.46 in)	107.6 mm × 65.5 mm × 79.4 mm (4.24 in × 2.58 in × 3.13 in)
Slot position	without restrictions	with restrictions, see table on page 18
Weight	approx. 0.35 kg (0.77 lb)	approx. 0.3 kg (0.66 lb)

Parameter	R&S®OSP-B125H
Number and type of relays	6 × SPDT, terminated (DP3T with external termination), 3 × SP6T, terminated
Relay type	coaxial relays, 2.92 female
Frequency range	DC to 40 GHz
Relay impedance	50 Ω
Termination impedance	50 Ω, 1 W per termination
Max. termination power per relay	SPDT: 1 W, SP6T: 3 W
Switching time (nominal)	10 ms
Current consumption (module)	max. 1685 mA (+27 V DC)
Dimensions (W × H × D)	324.8 mm × 65.5 mm × 70.8 mm (12.79 in × 2.58 in × 2.79 in)
Slot position	with restrictions, see table rules for integration on page 18
Weight	approx. 1.4 kg (3.08 lb)

RF characteristics

Type	Parameter	DC to 6 GHz	6 GHz to 12.4 GHz	12.4 GHz to 18 GHz	18 GHz to 26.5 GHz	26.5 GHz to 40 GHz
SPDT, failsafe, external terminated	VSWR [11]	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.90	≤ 2.3
	insertion loss	< 0.5 dB/ ≤ 0.30 dB [11]	< 0.7 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 1.0 dB/ ≤ 0.70 dB [11]	< 1.0 dB/ ≤ 0.80 dB [11]
	isolation [11]	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB	≥ 50 dB
	average power [14]	80 W	60 W	50 W	20 W	10 W
	number of switching cycles [11]	2 million				
SP6T, failsafe (normally open), terminated	VSWR [11]	≤ 1.30	≤ 1.40	≤ 1.50	≤ 1.70	≤ 2.20
	insertion loss	< 0.5 dB/ ≤ 0.20 dB [11]	< 0.7 dB/ ≤ 0.40 dB [11]	< 0.7 dB/ ≤ 0.50 dB [11]	< 1.0 dB/ ≤ 0.70 dB [11]	< 1.3 dB/ ≤ 1.10 dB [11]
	isolation [11]	≥ 70 dB	≥ 60 dB	≥ 60 dB	≥ 55 dB	≥ 50 dB
	average power [11, 14]	40 W	30 W	25 W	15 W	5 W
	number of switching cycles [11]	2 million per position				

Universal RF switch modules with N and BNC connectors

R&S®OSP-B106 (mixed module with SPDT (N) and SPDT (BNC) relays)

Parameter	R&S®OSP-B106	
Number of relays	3 × SPDT with N female connector	3 × SPDT with BNC female connector
Relay type	coaxial relay	coaxial relay
Relay impedance	50 Ω	
Current consumption	module, max. 600 mA (+27 V DC)	
Dimensions (W × H × D)	216.2 mm × 65.5 mm × 152.0 mm (8.51 in × 2.58 in × 5.98 in) double-width	
Slot position	with restrictions, see table rules for integration on page 18	
Weight	approx. 1.22 kg (2.69 lb)	

RF characteristics

Type	Parameter	DC to 1 GHz	1 GHz to 2 GHz	2 GHz to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz
SPDT, failsafe, N connector	VSWR [11]	≤ 1.15	≤ 1.20	≤ 1.25	≤ 1.35	≤ 1.50
	insertion loss	≤ 0.15 dB [11]	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.4 dB/ ≤ 0.25 dB [11]	< 0.4 dB/ ≤ 0.35 dB [11]	< 0.5 dB/ ≤ 0.50 dB [11]
	isolation [11]	≥ 85 dB	≥ 80 dB	≥ 75 dB	≥ 70 dB	≥ 60 dB
	average power [11, 14]	700 W	500 W	400 W	250 W	200 W
	number of switching cycles [11]	1 million				

Type	Parameter		DC to 10 MHz	10 MHz to 100 MHz	100 MHz to 500 MHz	500 MHz to 900 MHz
SPDT, failsafe, BNC connector	VSWR		< 1.25	< 1.25	< 1.45	< 1.95
	insertion loss		< 0.5 dB	< 0.5 dB	< 1 dB	< 1.2 dB
	isolation		> 35 dB	> 35 dB	> 23 dB	> 15 dB
	average power	AC/RF [14]	60 W	60 W	40 W	20 W
		DC	max. 60 W (max. 2 A, < 60 V)			
	number of switching cycles [11]		AC/RF (cold switching): 2 million; DC: 30 V/1 A, to max. 30 W: 0.5 million; 30 V/2 A, to max. 60 W: 0.1 million			

R&S®OSP-B131/-B132/-B133/-B136 (SPDT, SP6T and DPDT)

Parameter	R&S®OSP-B131	R&S®OSP-B132	R&S®OSP-B133	R&S®OSP-B136
Number of RF relays	2 × SPDT	6 × SPDT	1 × SP6T	2 × DPDT
Relay type	coaxial relays with N female connector			
Relay impedance	50 Ω			
Switching time	< 15 ms			
Current consumption (27 V)	max. 300 mA	max. 900 mA	max. 190 mA	max. 300 mA
Dimensions (W × H × D)	107.6 × 65.5 × 85 mm (4.24 × 2.58 × 3.34 in)	216.2 × 65.5 × 84.5 mm (8.51 × 2.58 × 3.34 in)	107.6 × 65.5 × 87.8 mm (4.24 × 2.58 × 3.46 in)	107.6 × 65.5 × 87.8 mm (4.24 × 2.58 × 3.48 in)
	standard width	double-width	standard width	standard width
Dimensions (D)	84.5 mm (3.27 in)	85 mm (3.35 in)	87.8 mm (3.46 in)	88.3 mm (3.48 in)
Slot position	without restrictions	with restrictions, see table on page 18	with restrictions, see table on page 18	without restrictions
Weight	approx. 0.4 kg (0.88 lb)	approx. 1.3 kg (2.87 lb)	approx. 0.5 kg (1.10 lb)	approx. 0.5 kg (1.10 lb)
Number of switching cycles [11]	1 million	1 million	2 million per position	2.5 million

RF characteristics R&S®OSP-B131, R&S®OSP-B132 and R&S®OSP-B136

Type	Parameter	DC to 1 GHz	1 GHz to 2 GHz	2 GHz to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz
SPDT/DPDT, failsafe	VSWR [11]	≤ 1.15	≤ 1.20	≤ 1.25	≤ 1.35	≤ 1.50
	insertion loss	< 0.35 dB/ ≤ 0.15 dB [11]	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.4 dB/ ≤ 0.25 dB [11]	< 0.4 dB/ ≤ 0.35 dB [11]	< 0.5 dB/ ≤ 0.50 dB [11]
	isolation [11]	≥ 85 dB	≥ 80 dB	≥ 75 dB	≥ 70 dB	≥ 60 dB
	average power [11, 14]	700 W	500 W	400 W	250 W	200 W

RF characteristics R&S®OSP-B133

Type	Parameter	DC to 1 GHz	1 GHz to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz
SP6T, failsafe (normally open)	VSWR [11]	≤ 1.20	≤ 1.20	≤ 1.35	≤ 1.50
	insertion loss	< 0.3 dB/ ≤ 0.20 dB [11]	< 0.3 dB/ ≤ 0.20 dB [11]	< 0.4 dB/ ≤ 0.35 dB [11]	< 0.6 dB/ ≤ 0.50 dB [11]
	isolation [11]	≥ 80 dB	≥ 80 dB	≥ 70 dB	≥ 60 dB
	average power [11, 14]	700 W	400 W	250 W	200 W

Universal solid-state RF switch modules (SSR)

9 kHz to 6 GHz: R&S®OSP-B107 (SSR, reflective [15]), 9 kHz to 10 GHz: R&S®OSP-B127 and R&S®OSP-B128 (SSR, absorptive [16])

Parameter	R&S®OSP-B107	R&S®OSP-B127	R&S®OSP-B128
Relay type	6 × SPDT, solid-state relay (SSR), reflective (non-terminated)	6 × SPDT, solid-state relay (SSR), absorptive (terminated)	1 to 3 × SP6T, solid-state relay (SSR), absorptive (terminated)
Connector type	SMA (female)		
Relay impedance	50 Ω		
Termination impedance, power	–	50 Ω, 0.25 W	50 Ω, 0.25 W
Frequency range	9 kHz to 6 GHz	9 kHz to 10 GHz	9 kHz to 10 GHz
Switching time (nom.) [11, 17]	7 µs	10 µs	10 µs
Settling time [18]	15 µs	15 µs	25 µs
Number of switching cycles [11]	> 100 million		
Current consumption (module)	max. 100 mA (+27 V DC)	max. 100 mA (+27 V DC)	max. 100 mA (+27 V DC)
Dimensions (W × H)	107.6 mm × 65.5 mm (4.24 in × 2.58 in), standard width		
Dimensions (D)	61.5 mm (2.42 in)	54.2 mm (2.13 in)	59.0 mm (2.34 in)
Slot position	without restrictions		
Weight	approx. 0.3 kg (0.66 lb)	approx. 0.3 kg (0.66 lb)	approx. 0.3 kg (0.66 lb)

RF characteristics

Type	Parameter	9 kHz to 3 MHz	3 MHz to 10 MHz	10 MHz to 1 GHz	1 GHz to 2.5 GHz	2.5 GHz to 5 GHz	5 GHz to 6 GHz
R&S®OSP-B107, SSR	VSWR	< 1.30	< 1.30	< 1.30	< 1.38	< 1.30	< 1.45
	insertion loss	< 1.0 dB	< 1.0 dB	< 1.0 dB	< 1.0 dB	< 1.3 dB	< 1.3 dB
	isolation	> 38 dB	> 38 dB	> 38 dB	> 28 dB	> 20 dB	> 18 dB
	max. power	15 mW (12 dBm)	1 W (30 dBm)				
	max. voltage	+2.5 V					

Type	Parameter	9 kHz to 10 MHz	10 MHz to 2.5 GHz	2.5 GHz to 5 GHz	5 GHz to 10 GHz
R&S®OSP-B127, SSR	VSWR	≤ 1.43	≤ 1.43	≤ 1.9	≤ 1.9
	insertion loss	< 1.4 dB	< 1.4 dB	< 1.7 dB	< 2.5 dB
	isolation	≥ 42 dB	≥ 36 dB	≥ 30 dB	≥ 20 dB
	max. power (for feedthrough)	≤ 1 MHz: 2.5 mW (4 dBm), > 1 MHz: 1 W (30 dBm)	1 W (30 dBm)		
	max. voltage	–0.3 V to +3.0 V			

Type	Parameter	9 kHz to 1 GHz	1 GHz to 2 GHz	2 GHz to 5 GHz	5 GHz to 9 GHz	9 GHz to 10 GHz
R&S®OSP-B128, SSR	VSWR	≤ 2.2	≤ 1.9	≤ 1.9	≤ 1.9	≤ 2.2
	insertion loss	< 5 dB	< 5.5 dB	< 6.5 dB	< 7.5 dB	< 8.0 dB
	isolation	≥ 70 dB	≥ 70 dB	≥ 60 dB	≥ 45 dB	≥ 35 dB
	crosstalk	≥ 70 dB	≥ 70 dB	≥ 60 dB	≥ 45 dB	≥ 35 dB
	max. power (for feedthrough)	≤ 1 MHz: 2.5 mW (4 dBm), > 1 MHz: 1 W (30 dBm)	1 W (30 dBm)			
	max. voltage	–0.3 V to +3.0 V				

[15] No termination.

[16] 50 Ω termination.

[17] 50 % CRTL on module bus to 90 % of the final value.

[18] 50 % CRTL on module bus to 0.1 dB of final value.

9 kHz to 8 GHz: R&S®OSP-B142 (power SSR 10 W, reflective or with external termination 1 W)

Parameter	R&S®OSP-B142 (model .03)	R&S®OSP-B142 (models .11/.12/.13)
Relay type	3 × DP3T, reflective, solid-state relay (SSR)	1 to 3 × SPDT, absorptive SSR (reflective DP3T with external termination)
Connector type	SMA female	
Relay impedance	50 Ω	
Termination impedance, power	no	yes, 2 pieces 50 Ω, 1 W
Frequency range	9 kHz to 6 (8) GHz [19]	
Switching time (nom.) [20]	≤ 5 µs	
Rise time/fall time [21]	≤ 1 µs	
Settling time (nom.) [11, 22]	≤ 20 ms	
Number of switching cycles [11]	> 100 Mio.	
Current consumption (module)	max. 50 mA (+27 V DC)	
Dimensions (W × H)	107.6 mm × 65.5 mm (4.24 in × 2.58 in), standard width	
Dimensions (D)	65 mm (2.56 in)	
Slot position	without restrictions	
Weight	approx. 0.3 kg (0.66 lb)	

RF characteristics

Type	Parameter	9 kHz to 2.5 GHz	2.5 GHz to 5 GHz	5 GHz to 6 GHz	6 GHz to 7 GHz [19]	7 GHz to 8 GHz [19]
R&S®OSP-B142 SSR	VSWR	≤ 1.33	≤ 1.67	≤ 1.9	≤ 2.32	≤ 3.00
	insertion loss	< 1.5 dB	< 2.0 dB	< 2.8 dB	< 2.8 dB	< 3.5 dB
	isolation	≥ 45 dB	≥ 40 dB	≥ 30 dB	≥ 30 dB	≥ 25 dB
	max. power (for feedthrough)	10 W (40 dBm)				
	max. voltage	–0.3 V to +3.0 V				

Switching and settling time of RF relays

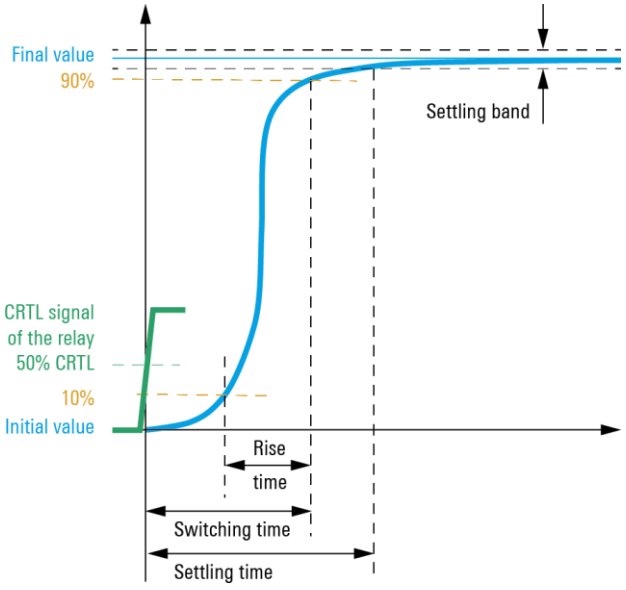


Diagram switching and settling time electromechanical coaxial relays and SSR

[19] Operational up to 6 GHz, functional up to 8 GHz.
[20] 50 % CRTL on module bus to 90 % of the final value.
[21] 10 % to 90% of final value.
[22] 50 % CRTL on module bus to 0.1 dB of the final value. The SSR of the R&S®OSP-B142 shows a creeping effect due to GaN technology. Settling time to 0.01 dB of final value is in the range of seconds.

Digital I/O and multiplexer modules

R&S®OSP-B103 (16 × digital I/O module)

Digital input channels	0 V to 3.3 V DC (LV-CMOS), max. 5.5 V	16, D-Sub-25 male connector
Digital output channels	open drain, max. 27 V DC, max. 200 mA	16, D-Sub-25 female connector
Switching time		< 10 ms
Output current	e.g. for open drain	max. 800 mA (+27 V DC)
Current consumption	module	max. 800 mA (+27 V DC)
Dimensions (W × H × D)	standard width	107.6 mm × 65.5 mm × 63.4 mm (4.24 in × 2.58 in × 2.50 in)
Slot position		without restrictions
Weight		approx. 0.1 kg (0.22 lb)

R&S®OSP-B108 (multiplexer module, 6-channel, 4-wire)

Number of inputs		1 × 4-wire, 1 × ground, unswitched
Number of outputs		6 × 4-wire, 3 × ground, unswitched (1 × per connector)
Relay type		electromechanical, failsafe
Max. switchable power		60 W (UL 2 A/30 V)
Max. current	continuous load/short-time < 10 ms	2 A/4 A
Max. switchable current		2 A
Max. switchable voltage		60 V DC, 30 V AC
Spreading resistance	switched path	0.1 Ω
Switching time (nominal)		< 10 ms
Number of switching cycles [11]	30 V DC/1 A, to max. 30 W	10 million
	30 V DC/2 A, to max. 60 W	1 million
Connectors (external)	input	1 × D-Sub-9 male connector
	outputs	3 × D-Sub-9 female connector
Current consumption	module	< 40 mA (+27 V DC)
Dimensions (W × H × D)	standard width	107.6 mm × 69.5 mm × 70 mm (4.24 in × 2.74 in × 2.76 in)
Slot position		without restrictions
Weight		0.16 kg (0.352 lb)

Special control modules for RF test systems

R&S®OSP-B104 (EMS module with drivers for external power relays)

Interfaces for external relays	RF high-load relay [23]	4
Control signal	impulse, presetting adjustable	100 ms
		0 s to 12.75 s, step width 50 ms
Control lines	pick-up current, max. 2.5 A at 24 V	2 per relay
Number of switching cycles [11]		max. 100 000
Return signal line (optocoupler input)	24 V DC, typ. 7.5 mA	1 per relay
Power supply of relay	24 V DC, ± 2 V	max. 2.5 A short-time, 0.1 A continuous
Interlock loop (optocoupler input)	24 V DC, typ. 15 mA	1
Number of digital input channels	0 V to 3.3 V DC, max. 5.5 V (LV-CMOS)	4
Number of digital output channels	open drain, max. 27 V DC, max. 200 mA	5
Connectors	interfaces for external relays	4 × D-Sub-9 female connector
	digital I/O, interlock	1 × D-Sub-15 female connector
Current consumption	module,	max. 800 mA (+27 V DC)
	internal separate current feed	max. 15 A (+5 V DC)
Dimensions (W × H × D)	standard width	107.6 mm × 65.5 mm × 264.1 mm (4.24 in × 2.58 in × 10.40 in)
Slot position	with restrictions, see table rules for integration on page 18	
Weight		approx. 0.4 kg (0.88 lb)

R&S®OSP-B114 (EMS module with N relay for compact test systems)

Number of RF relays	DPDT (N female)	1
	SPDT (SSR) terminated (SMA female) [24] (interlock controlled)	1
Connectors	digital output interface	1 × D-Sub-9 female connector
	digital input and interlock interface	1 × D-Sub-9 male connector
Interlock loop (optocoupler input)	24 V DC, typ. 15 mA	1
Interlock output (relay contact)	max. 30 V DC, max. 1 A	2
Interlock output (LED driver)	typ. 1.8 V DC, max.1.4 mA	1
Number of digital input channels	0 V to 3.3 V DC, max. 5.5 V (LV-CMOS)	4
Number of digital output channels	open drain, max. 27 V DC, max. 200 mA per output, max. 600 mA in total	4
Current consumption	module	max. 200 mA (+27 V DC), excluding digital outputs
Dimensions (W × H × D)	standard width	107.6 mm × 65.5 mm × 88 mm (4.24 in × 2.58 in × 3.46 in)
Slot position	without restrictions	
Weight		approx. 0.3 kg (0.66 lb)

RF characteristics

Type	Parameter	DC to 1 GHz	1 GHz to 2 GHz	2 GHz to 3 GHz	3 GHz to 8 GHz	8 GHz to 12.4 GHz
DPDT, failsafe	VSWR [11]	≤ 1.15	≤ 1.20	≤ 1.25	≤ 1.35	≤ 1.50
	insertion loss	≤ 0.15 dB [11]	< 0.4 dB/ ≤ 0.20 dB [11]	< 0.4 dB/ ≤ 0.25 dB [11]	< 0.4 dB/ ≤ 0.35 dB [11]	< 0.5 dB/ ≤ 0.50 dB [11]
	isolation [11]	≥ 85 dB	≥ 80 dB	≥ 75 dB	≥ 70 dB	≥ 60 dB
	average power [11, 14]	700 W	500 W	400 W	250 W	200 W
	impedance	50 Ω				
	number of switching cycles [11]	1 million				

[23] Relay types, e.g. DPDT relay, Spinner 512670 (1 kW/5 GHz) or DPDT relay, Spinner 640075 (10 kW/1 GHz).

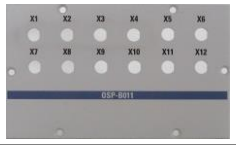
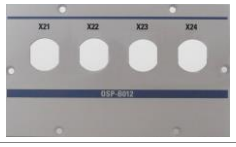
[24] For data on SPDT (SSR) relay, see R&S®OSP-B127.

R&S®OSP-PM-I (passive module for integration of one power sensor) [25]

Parameter	R&S®OSP-PM-I	
Interfaces	for Rohde & Schwarz USB power sensors, e.g. R&S®NRP-Zxx or R&S®NRPxS with R&S®NRP-ZK6	USB feedthrough filter (external USB-B female connector to internal ODU female connector, series L)
		RF feedthrough (N female connector to N female connector)
Current consumption	no module bus required	–
Dimensions (W × H × D)	standard width	107.6 mm × 65.5 mm × 200 mm (8.51 in × 2.58 in × 7.87 in)
Slot position		with restrictions, see table rules for integration on page 18
Weight		approx. 0.25 kg (0.55 lb)

Options for RF feedthroughs

R&S®OSP-B011 and R&S®OSP-B012 module panels for RF feedthroughs

R&S®OSP-B011	module panel, 12 × SMA mounting holes for R&S®OSP-Z011 or R&S®OSP-Z012, standard width	
R&S®OSP-B012	module panel, 4 × N mounting holes for R&S®OSP-Z010 or R&S®OSP-Z011, standard width	

R&S®OSP-Z010/-Z011/-Z012 (cable sets for the module panels)

R&S®OSP-Z010	4 × RF cables, N female to N female
R&S®OSP-Z011	4 × RF cables, N female to SMA female
R&S®OSP-Z012	4 × RF cables, SMA female to SMA female

Type	Parameter	DC to 1 GHz	1 GHz to 3 GHz	3 GHz to 6 GHz	6 GHz to 12.4 GHz	12.4 GHz to 18 GHz
R&S®OSP-Z010	VSWR	≤ 1.07	≤ 1.1	≤ 1.1	≤ 1.2	≤ 1.4
	insertion loss	< 0.35 dB	< 0.6 dB	< 0.8 dB	< 1.2 dB	< 1.4 dB
	average power	700 W	400 W	250 W	200 W	150 W
R&S®OSP-Z011	VSWR	≤ 1.07	≤ 1.1	≤ 1.1	≤ 1.2	≤ 1.4
	insertion loss	< 0.35 dB	< 0.6 dB	< 0.8 dB	< 1.2 dB	< 1.4 dB
	average power	240 W	240 W	150 W	120 W	100 W
R&S®OSP-Z012	VSWR	≤ 1.05	≤ 1.07	≤ 1.1	≤ 1.15	≤ 1.2
	insertion loss	< 0.35 dB	< 0.6 dB	< 0.8 dB	< 1.2 dB	< 1.4 dB
	average power	240 W	240 W	150 W	120 W	100 W

[25] For R&S®NRP power sensors with USB connector, e.g. for R&S®NRP-Z211 or R&S®NRPxS with R&S®NRP-ZK6.

Remote control module and accessories for the OSP satellite (OSP-B200S2)

R&S®OSP-B200R remote control module for R&S®OSP-B200S2 satellite box

Input	internal	2 × R&S®OSP module buses
Interface to satellite box	serial electrical bus (wired link)	1 × D-Sub-9 female connector
	fiber-optic cable (FOL), optional	1 × SC female connector, simplex
Current consumption via module buses	via serial electrical bus	max. 1600 mA (+27 V DC)
	via FOL	0 mA (+27 V DC), 260 mA (3.3 V DC)
Status indication	power, link/busy	2 × LEDs
Dimensions (W × H × D)	simple module width	107.6 mm × 65.5 mm × 68 mm (4.2 in × 2.6 in × 2.7 in)
Slot position		1, 2 and/or 3, F1, F2
Weight		approx. 0.09 kg (0.2 lb)

R&S®OSP-B200P AC power supply for R&S®OSP-B200S satellite box

Rated voltage, rated frequency		90 V to 264 V AC, 47 Hz to 63 Hz
Input current		1.4 A (RMS), 115 V AC
		0.7 A (RMS), 230 V AC
Output power		max. 105 W
Output voltage, output current		28 V to 29 V, 3.75 A
Temperature	operating temperature range	0 °C to +60 °C
	storage temperature range	–40 °C to +85 °C
Dimensions (W × H × D)	without cable	75.2 mm × 39.0 mm × 146.2 mm (3.0 in × 1.5 in × 5.8 in)
Weight	without power cable	approx. 0.6 kg (1.32 lb)

R&S®OSP-Z200/-Z201/-Z202 connecting cables between R&S®OSP-B200R and R&S®OSP-B200S

R&S®OSP-Z200A	serial electrical bus cable	D-Sub-9 connector at both ends, length: 5 m
R&S®OSP-Z200B		D-Sub-9 connector at both ends, length: 10 m
R&S®OSP-Z201A	fiber-optic link (FOL), simplex	SC connector at both ends, length: 5 m
R&S®OSP-Z201B		SC connector at both ends, length: 10 m
R&S®OSP-Z201C		SC connector at both ends, length: 20 m
R&S®OSP-Z202AF	fiber-optic link (FOL), FSMA-to-FSMA coupling (two cables are required)	1 × SC connector, 1 × FSMA, length: 5 m
R&S®OSP-Z202BF		1 × SC connector, 1 × FSMA, length: 10 m

Ordering information

R&S®OSP base units and satellite box

Designation		Type	Order No.
R&S®OSP base units			
Accessories: power cord, Ethernet cable (length: 2 m), operating manual (quick start guide)			
R&S®OSP base unit (2 RU) with 3 + 3 module slots and monitor interface		R&S®OSP220	1528.3105K02
R&S®OSP base unit (2 RU) with 3 + 2 module slots and touchscreen		R&S®OSP230	1528.3105K03
R&S®OSP base 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	1528.3134K02
	with fiber-optic link (FOL) interface and electrical interface (wired link)		1528.3134K04

Options for R&S®OSP base units

Designation	Type	Order No.
For all R&S®OSP base units		
Hardware trigger function (preliminary information for Q1/2020)	R&S®OSP-K100	1528.3486.02
For R&S®OSP320 unit only		
Touchscreen module for R&S®OSP320	R&S®OSP-B300M	1528.3128.02

Switch and control modules for R&S®OSP [26]

Designation	Type	Order No.
RF switch modules with electromechanical RF coaxial relays		
RF switch modules with non-terminated relays up to 67 GHz		
6 × SPDT (SMA), DC to 18 GHz, non-terminated	R&S®OSP-B101	1505.5101.02
6 × SPDT (SMA), DC to 18 GHz, non-terminated, latching	R&S®OSP-B101L	1505.5101.52
2 × SP6T (SMA), DC to 18 GHz, non-terminated	R&S®OSP-B102	1505.5201.02
2 × SP6T (SMA), DC to 18 GHz, non-terminated, latching	R&S®OSP-B102L	1505.5201.52
6 × SPDT (SMA), DC to 26.5 GHz, non-terminated	R&S®OSP-B111E	1505.4605.26
6 × SPDT (K (2.92 mm)), DC to 40 GHz, non-terminated	R&S®OSP-B111	1505.4605.02
3 × SPDT (2.4 mm), DC to 50 GHz, non-terminated	R&S®OSP-B111U	1505.4605.53
6 × SPDT (2.4 mm), DC to 50 GHz, non-terminated		1505.4605.56
3 × SPDT (2.4 mm), DC to 50 GHz, non-terminated, latching	R&S®OSP-B111UL	1528.1531.13
6 × SPDT (2.4 mm), DC to 50 GHz, non-terminated, latching		1528.1531.16
3 × SPDT (1.85 mm), DC to 67 GHz, non-terminated, latching	R&S®OSP-B111VL	1515.5991.13
6 × SPDT (1.85 mm), DC to 67 GHz, non-terminated, latching		1515.5991.16
1 × SP6T (SMA), DC to 26.5 GHz, non-terminated	R&S®OSP-B112E	1528.1560.11
2 × SP6T (SMA), DC to 26.5 GHz, non-terminated		1528.1560.12
2 × SP6T (2.92 mm), DC to 40 GHz, non-terminated	R&S®OSP-B112	1505.4611.02
1 × SP6T (2.4 mm), DC to 50 GHz, non-terminated	R&S®OSP-B112U	1528.1560.51
2 × SP6T (2.4 mm), DC to 50 GHz, non-terminated		1528.1560.52
1 × SP6T (2.4 mm), DC to 50 GHz, non-terminated, latching	R&S®OSP-B112UL	1528.1548.11
2 × DPDT (SMA), DC to 18 GHz, non-terminated	R&S®OSP-B116	1515.5827.02
2 × DPDT (SMA), DC to 26.5 GHz, non-terminated	R&S®OSP-B116E	1515.5827.26
2 × DPDT (2.92 mm), DC to 40 GHz, non-terminated	R&S®OSP-B116H	1515.5827.40
1 × DPDT (2.4 mm), DC to 50 GHz, non-terminated	R&S®OSP-B116U	1515.5827.51
2 × DPDT (2.4 mm), DC to 50 GHz, non-terminated		1515.5827.52
1 × SP8T (SMA), 2 × SPDT (SMA), DC to 18 GHz, non-terminated	R&S®OSP-B119	1515.5856.02
1 × SP8T (SMA), 2 × SPDT (SMA), DC to 26.5 GHz, non-terminated	R&S®OSP-B119E	1515.5856.26
RF switch modules with terminated relays up to 40 GHz		
3 × SPDT (SMA), DC to 18 GHz, terminated	R&S®OSP-B121	1515.5504.02
3 × SPDT (SMA), DC to 26.5 GHz, terminated	R&S®OSP-B121E	1515.5504.26
3 × SPDT (2.92 mm), DC to 40 GHz, terminated	R&S®OSP-B121H	1515.5504.40
1 × SP6T (SMA), DC to 18 GHz, terminated	R&S®OSP-B122	1515.5510.02
1 × SP6T (SMA), DC to 26.5 GHz, terminated	R&S®OSP-B122E	1528.1525.26
1 × SP6T (2.92 mm), DC to 40 GHz, terminated	R&S®OSP-B122H	1528.1525.02
6 × SPDT (SMA), 1 × SP6T (SMA), DC to 18 GHz, terminated	R&S®OSP-B123	1515.5527.02
3 × SPDT (SMA), 2 × SP6T (SMA), DC to 18 GHz, terminated	R&S®OSP-B124	1515.5533.02
6 × SPDT (SMA), 3 × SP6T (SMA), DC to 18 GHz, terminated	R&S®OSP-B125	1515.5540.02
6 × SPDT (SMA), 3 × SP6T (SMA), DC to 26.5 GHz, terminated	R&S®OSP-B125E	1515.5540.26
6 × SPDT (2.92 mm), 3 × SP6T (2.92 mm), DC to 40 GHz, terminated	R&S®OSP-B125H	1515.5540.40

[26] All electromechanical relays not designated as latching (bistable) are failsafe (monostable).

Designation	Type	Order No.
3 × SP6T (SMA), DC to 18 GHz, terminated	R&S®OSP-B126	1515.5556.02
1 × SP8T (SMA), terminated, 2 × SPDT (SMA) non-terminated, DC to 18 GHz	R&S®OSP-B129	1517.7004.02
1 × SP8T (SMA), terminated, 2 × SPDT (SMA), non-terminated, DC to 26.5 GHz	R&S®OSP-B129E	1517.7004.26
RF switch modules with N connectors up to 12.4 GHz		
3 × SPDT (N), DC to 12.4 GHz, 3 × SPDT (BNC), DC to 900 MHz, non-terminated	R&S®OSP-B106	1505.5601.02
2 × SPDT (N), DC to 12.4 GHz, non-terminated	R&S®OSP-B131	1505.4740.02
6 × SPDT (N), DC to 12.4 GHz, non-terminated	R&S®OSP-B132	1505.4757.02
1 × SP6T (N), DC to 12.4 GHz, non-terminated	R&S®OSP-B133	1528.3157.02
2 × DPDT (N), DC to 12.4 GHz, non-terminated	R&S®OSP-B136	1522.4500.02
RF switch modules with coaxial RF solid-state relays (SSR)		
6 × SPDT (SMA), SSR, 9 kHz to 6 GHz, reflective	R&S®OSP-B107	1505.5901.02
6 × SPDT (SMA), SSR, 9 kHz to 10 GHz, absorptive [16]	R&S®OSP-B127	1505.4728.02
1 × SP6T (SMA), SSR, 9 kHz to 10 GHz, absorptive [16]	R&S®OSP-B128	1505.4734.11
2 × SP6T (SMA), SSR, 9 kHz to 10 GHz, absorptive [16]		1505.4734.12
3 × SP6T (SMA), SSR, 9 kHz to 10 GHz, absorptive [16]		1505.4734.13
3 × DP3T (SMA), power SSR, 9 kHz to 8 GHz, 10 W, reflective	R&S®OSP-B142	1505.4792.03
1 × SPDT (SMA), power SSR, 9 kHz to 8 GHz, 10 W, absorptive [16] (external termination: 1 W) [27]		1505.4792.11
2 × SPDT (SMA), power SSR, 9 kHz to 8 GHz, 10 W, absorptive [16] (external termination: 1 W) [27]		1505.4792.12
3 × SPDT (SMA), power SSR, 9 kHz to 8 GHz, 10 W, absorptive [16] (external termination: 1 W) [27]		1505.4792.13
Accessory for R&S®OSP-B128 module		
Additional relay for R&S®OSP-B128 (upgrade kit for OSP-B128 with 1 or 2 relays)	R&S®OSP-Z128	1505.4734.10
Special control modules for RF test systems		
Relay driver module, control of four external RF power relays, additional digital inputs/outputs, interlock	R&S®OSP-B104	1505.5401.02
EMC module (DPDT, SPDT, interlock, digital I/O)	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
Passive module for integration of one Rohde & Schwarz USB power sensor (see page 35)	R&S®OSP-PM-I	1515.5985.02

RF feedthroughs for R&S®OSP

Module panel with 12 × SMA mounting holes	R&S®OSP-B011	1505.4763.02
Module panel with 4 × N mounting holes	R&S®OSP-B012	1505.4770.02
Cable set (4 × RF cables, N female to N female), DC to 12.4 GHz	R&S®OSP-Z010	1505.4534.02
Cable set (4 × RF cables, N female to SMA female), DC to 12.4 GHz	R&S®OSP-Z011	1505.4540.02
Cable set (4 × RF cables, SMA female to SMA female), DC to 18 GHz	R&S®OSP-Z012	1505.4557.02

[27] Reflective DP3T relays with external termination (1 W).

Accessories for R&S®OSP base units

Recommended extras for installation in 19" racks		
19" rack adapter, 2 RU for R&S®OSP220, R&S®OSP230	R&S®ZZA-KNA21	1177.8026.00
19" rack adapter, 3 RU for R&S®OSP320	R&S®ZZA-KNA31	1177.8032.00

Accessories for R&S®OSP satellite box

Remote control module for R&S®OSP-B200S2 satellite box with electrical interface (wired link)	R&S®OSP-B200R	1528.3140.02
Remote control module for R&S®OSP-B200S2 satellite box with fiber-optic link (FOL) interface and electrical interface		1528.3140.04
AC power supply for R&S®OSP-B200S2 satellite box (required for FOL interface)	R&S®OSP-B200P	1528.3205.02

Cable between R&S®OSP-B200R and R&S®OSP-B200S2		
Electrical bus cable, length: 5 m	R&S®OSP-Z200A	1528.3170.02
Electrical bus cable, length: 10 m	R&S®OSP-Z200B	1528.3170.04
Fiber-optic link (FOL), SC to SC, length: 5 m	R&S®OSP-Z201A	1528.3186.02
Fiber-optic link (FOL), SC to SC, length: 10 m	R&S®OSP-Z201B	1528.3186.04
Fiber-optic link (FOL), SC to SC, length: 20 m	R&S®OSP-Z201C	1528.3186.06
Fiber-optic link (FOL), SC to FSMA, length: 5 m	R&S®OSP-Z202AF	1528.3192.02
Fiber-optic link (FOL), SC to FSMA, length: 10 m	R&S®OSP-Z202BF	1528.3192.04

Service options for R&S®OSP [28]

Extended warranty, one year	R&S®WE1	The warranty depends of the R&S®OSP configuration. Please contact your local Rohde & Schwarz sales office.
Extended warranty, two years	R&S®WE2	
Extended warranty, three years	R&S®WE3	
Extended warranty, four years	R&S®WE4	
Extended warranty with calibration coverage, one year	R&S®CW1	
Extended warranty with calibration coverage, two years	R&S®CW2	
Extended warranty with calibration coverage, three years	R&S®CW3	
Extended warranty with calibration coverage, four years	R&S®CW4	
Documentation of calibration values	R&S®DCV-1	0240.2187.14
DKD (ISO 17025), calibration including ISO 9000 (per module slot can only be ordered with the instrument)	R&S®OSP-DKD	1502.0044.14

Extended warranty with a term of one to four years (WE1 to WE4) [29]
Repairs carried out during the contract term are free of charge [30]. Necessary calibration and adjustments carried out during repairs are also covered. Simply contact the forwarding agent we name; your product will be picked up free of charge and returned to you in top condition a couple of days later.

Extended warranty with calibration (CW1 to CW4) [29]
Enhance your extended warranty by adding calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated, inspected and maintained during the term of the contract. It includes all repairs [30] and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

Certificates

[28] System modules (R&S®OSP-B15x, e.g. R&S®OSP-B157) need a separate warranty, calibration and DKD option.
[29] The costs for the extended warranty comply with the list price of the R&S®OSP configuration.
[30] Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.

Service that adds value

- Worldwide
- Local und 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

Rohde&Schwarz customer support

www.rohde-schwarz.com/support

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R&S®OSP Open Switch and Control Platform
Data without tolerance limits is not binding | Subject to change

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