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RadiSwitch® Series

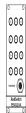
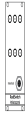
EMC and RF test setups often consist of many signal paths. In order to enable automated testing, it should be possible to switch these signal paths in an automated manner. The series of RadiSwitch® plug-in cards in combination with a RadiCentre® test system do just that.

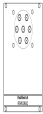
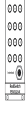
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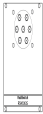
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RadiSwitch® Models Overview

Product Name	Max. Frequency Range	Connector type	Life Cycles
 RadiSwitch® RSW1024V	Max. 67 GHz	4x SPDT 1.85 mm V-type	2.000.000 cycles
 RadiSwitch® RSW1022V	Max. 67 GHz	2x SPDT 1.85 mm V-type	2.000.000 cycles
 RadiSwitch® RSW1062Q	Max. 50 GHz	2x SP6T 2.4 mm Q-type	2.000.000 cycles

Product Name	Max. Frequency Range	Connector type	Life Cycles	Get Quote
 RadiSwitch® RSW1061Q	Max. 50 GHz	1x SP6T 2.4 mm Q-type	2.000.000 cycles	
 RadiSwitch® RSW1024Q	Max. 50 GHz	4x SPDT 1.85 mm Q-type	2.000.000 cycles	
 RadiSwitch® RSS1022Q	Max. 50 GHz	2x SPDT 1.85 mm Q-type	2.000.000 cycles	
 RadiSwitch® RSW1062K	Max. 40 GHz	2x SP6T 2.92 mm K-type	2.000.000 cycles	
 RadiSwitch® RSW1061K	Max. 40 GHz	1x SP6T 2.92 mm K-type	2.000.000 cycles	
 RadiSwitch® RSW1024K	Max. 40 GHz	4x SPDT 2.92 mm K-type	10.000.000 cycles	
 RadiSwitch® RSW1022K	Max. 40 GHz	2x SPDT 2.92 mm K-type	10.000.000 cycles	
 RadiSwitch® RSW1062S	Max. 18 GHz	2x SP6T SMA	5.000.000 cycles	

Product Name	Max. Frequency Range	Connector type	Life Cycles	Get Quote
 RadiSwitch® RSW1061S	Max. 18 GHz	1x SP6T SMA	5.000.000 cycles	
 RadiSwitch® RSW1024S	Max. 18 GHz	4x SPDT SMA	10.000.000 cycles	
 RadiSwitch® RSW1022S	Max. 18 GHz	2x SPDT SMA	10.000.000 cycles	
 RadiSwitch® RSW1021N	Max. 12,4 GHz	2x SPDT N-Type	1.000.000 cycles	
 RadiSwitch® RSW1021B	Max. 3 GHz	2x SPDT BNC	1.000.000 cycles	
 RadiSwitch® RSW2002E	8-way Terminal Block	2x External Relay	NA	

THE RadiSwitch® Range

Model	Relay	Connector	Max. Frequency
RSW1021B	1 x SPDT	BNC	3 GHz
RSW1021N	1 x SPDT	N-type	12.4 GHz
RSW1022S	2 x SPDT	SMA	18 GHz
RSW1024S	4 x SPDT	SMA	18 GHz
RSW1061S	1 x SP6T	SMA	18 GHz
RSW1062S	2 x SP6T	SMA	18 GHz
RSW1022K	2 x SPDT	2.92 mm K-type	40 GHz
RSW1024K	4 x SPDT	2.92 mm K-type	40 GHz
RSW1061K	1 x SP6T	2.92 mm K-type	40 GHz
RSW1062K	2 x SP6T	2.92 mm K-type	40 GHz
RSW1022Q	2 x SPDT	2.4 mm Q-type	50 GHz
RSW1024Q	4 x SPDT	2.4 mm Q-type	50 GHz
RSW1061Q	1 x SP6T	2.4 mm Q-type	50 GHz
RSW1062Q	2 x SP6T	2.4 mm Q-type	50 GHz
RSW1022V	2x SPDT	1.85 mm V-type	67 GHz
RSW1024V	4x SPDT	1.85 mm V-type	67 GHz
RSW2002E	2 x external	8-way terminal block	External relay dependant

Flexible

The RadiSwitch® RF coaxial relay plug-in cards can switch RF signals from DC to 67 GHz and with a maximum switching capacity of up to 700 Watt. To switch RF power levels above 700 W, an external relay can be remotely controlled via a RadiSwitch plug-in card. RadiSwitch® plug-in cards are available in several versions, with one, two or four SPDT (single pole double throw) coaxial relays or SP6T (single pole six throw) coaxial relays. These versions are available in 18 GHz (SMA type), 40 GHz (k type), 50 GHz (Q type) and 67GHz (V type) models. In addition, plug-in cards with BNC-type (3 GHz) or N-type (12.4 GHz) connectors are available. Any combination and quantity of plug-in cards is allowed in the RadiCentre®, making the system one of the most flexible switching systems in the world.

Hardware interlock

The first relay of the RadiSwitch® plug-in card can be defined as a standard relay or as a safety interlock relay. When used as a safety interlock, this relay can disable the RF input to the amplifier

to prevent personnel from being exposed to high radiated RF fields. The RF interlock input can be connected to a switch on the access door of the test chamber.

External switching

Powerful RF amplifiers are often located in separate (shielded) rooms with suitable cooling facilities. To control the output of these amplifiers, a RadiSwitch plug-in card can be connected to an external switch box. The RSW2002E plug-in card has the drivers for controlling two external switches with a current of 500 mA per relay and has an internal power supply to power the relays of the 12 VDC, 24 VDC or 28 VDC type.

Control

The RadiSwitch® plug-in cards occupy (depending on the type of relay) 1 or 2 slots of the RadiCentre® modular and multifunctional EMC system. The RadiCentre® is available in three different models; a single, double or seven slot version and is completely flexible and expandable. The RadiCentre® provides the main platform for most of Raditeq's test and measurement products. Both the 2- and 7-slot versions offer a 7 "TFT " touch screen for manual control and monitoring, but can also be controlled from a PC via USB, LAN or GPIB (optional). Finally, the

RadiSwitch® RF Switch Matrixes

The RadiSwitch® series offers a range of RF switching plug-in cards for fully automated EMC testing.

EMC test systems are often complex installations with many different test and measurement instruments. To enable fully automated testing, all measuring instruments and the connections between amplifiers, power meters, antennas and EMI receivers must be automatically selected. The RadiSwitch® is specially designed to switch RF signals between multiple instruments during EMC and RF measurements. The RadiSwitch® plug-in cards plug into a RadiCentre® modular test system, which is an associated part of the switchgear for all types of EMC and RF tests. The switching cards can easily be controlled automatically by an EMC test software package such as RadiMation®.

In an EMC or RF test situation, switching of RF signal paths often occurs. That's why the RadiSwitch® uses highly reliable relays, with over a million switches (*). This means, with 24/7 continuous use for 365 days a year while switching every minute, the RadiSwitch® cards will still last 2 years! In more regular situations (10 hours/day, 250 days a year and switching 10 times an hour) the RadiSwitch® will last 40 years.

() SMA 5 – 10 million cycles; K and W 2 million cycles*

Easy to use & extendable

The system is "Plug and Play", which means that every plug-in card is automatically recognized, initialized and ready to use. The user can configure and control the relay position of each individual RadiSwitch® plug-in card using the touch screen or using EMC testing software. Extensive switching applications can be achieved by using multiple RadiCentre® EMC systems.

RadiSwitch®

Maximum Flexibility in Test Automation



Flexible **High Quality** **Extensible**

EMC test systems are complex installations with many test and measurement instruments connected. In order to enable full automated testing, these devices and measuring instruments as well as the connections made between amplifiers, power meters, antennae and EMI receivers should be controlled in an automated manner. To enable switching these signals Raditeq developed the RadiSwitch® plug-in cards that are used in combination with the RadiCentre® modular test system.

Flexible & Wide range

The RadiSwitch® RF coaxial relay plug-in cards are able to switch RF signals from DC until 67 GHz and with RF power up to 700 Watts directly, or any high RF power indirect using externally controlled switches. RadiSwitch® plug-in cards are available in several versions, with one, two or four SPDT coaxial relays, alternatively one or two SP6T of different type coaxial relays; N-Type, BNC, SMA, 2.92mm (K) and 2.4 (Q). Any combination of plug-in cards is allowed, making this system the most flexible switching systems in the world!

High quality

The RadiSwitch® plug-in cards use high quality switches with excellent RF characteristics. The insertion loss is specified at typical 0.4 dB and isolation is typically 60 dB. The lifetime (maximum switch cycles) of the internal relays is typically 10.000.000 cycles. This ensures long term usage of your switch system.

Extensible & Easy to use

RadiSwitch® plug-in cards are designed to fit in the RadiCentre® modular EMC test systems. This system has a backplane that will fit one, two or seven plug-in cards, bringing the maximum capacity of the system to 28 relays in the RadiCentre® 7-slot system. Of course it is possible to build even larger switching systems by combining any number of RadiCentre® systems. The system is "Plug and Play", which means that every board is automatically recognised, initialised and ready for use. The user can configure and control the functionality of every individual plug-in card by means of external software or using the RadiCentre® colour TFT touch screen display.

Hardware interlock

The first relay of the RadiSwitch® plug-in card (only for SPDT models) can either be used as a standard relay or as a safety interlock relay. When using this relay as a safety interlock, this enables the function to switch OFF the RF input to the amplifier, in order to prevent personnel to be subjected to high radiated RF fields. The RF interlock input can be connected to a switch on the entrance door of the test chamber.

External switch control

High power RF amplifiers are normally placed in separate test rooms with appropriate cooling facilities. To control these amplifiers the RSW2002E RadiSwitch plug-in card can be connected to an external high power switch system which has an internal power supply to power 12VDC/24VDC/28VDC external (high power) relays.

Software support

The RadiSwitch® plug-in cards are software controllable. Besides the RadiMation® integral EMC measurement software the system can be controlled by any EMC measurement package using control commands.

RadiSwitch® Technical Specifications

Performance		All models
Frequency range internal relays and connectors		3 GHz for BNC, 12,4 GHz for N-type, 18 GHz for SMA 40 GHz for 2,92mm (k) connector 50 GHz for 2.4mm (Q) connector 67 GHz for SPDT (V) - SMA
Power handling capacity, internal relays		See paragraph 'Average power' below
External relays		2 external relays can be driven, max current 0,5A per relay 12V, 24V or 28V supply software selectable.
Models		
RSW1021B		1 coaxial switch SPDT, BNC-type 3 GHz (1 slot)
RSW1021N		1 coaxial switch SPDT, N-type 12.4 GHz (1 slot)
RSW1022S		2 coaxial switches SPDT, SMA 18GHz (1 slot)
RSW1024S		4 coaxial switches SPDT, SMA 18GHz (1 slot)
RSW1061S		1 coaxial switch SP6T, SMA 18GHz (2 slots)
RSW1062S		2 coaxial switches SP6T, SMA 18GHz (2 slots)
RSW1022K		2 coaxial switches SPDT, 2.92mm (k) 40 GHz (1 slot)
RSW1024K		4 coaxial switches SPDT, 2.92mm (k) 40 GHz (1 slot)
RSW1061K		1 coaxial switch SP6T, 2.92mm (k) 40 GHz (2 slots)
RSW1062K		2 coaxial switches SP6T, 2.92mm (k) 40 GHz (2 slots)
RSW1022Q		2 coaxial switches SPDT, 2.4mm (Q) 50 GHz (1 slot)
RSW1024Q		4 coaxial switches SPDT, 2.4mm (Q) 50 GHz (1 slot)
RSW1061Q		1 coaxial switch SP6T, 2.4mm (Q) 50 GHz (2 slots)
RSW1062Q		2 coaxial switches SP6T, 2.4mm (Q) 50 GHz (2 slots)
RSW1022V		2 coaxial switches SPDT, SMA 67GHz (1 slot)
RSW1024V		4 coaxial switches SPDT, SMA 67GHz (1 slot)
RSW2002E		2 outputs for SP6T, external relay driver card 12/24/28VDC (1 slot)
Relay Lifetime		
SPDT relays, SMA or 2,92mm (k)		10.000.000 cycles
SP6T relay SMA		5.000.000 cycles
SP6T relay 2,92mm (k) or 2.4mm (Q)		2.000.000 cycles
N-type and BNC relay		1.000.000 cycles
Safety		
Warranty (1)		3 Years

1) Standard one year of warranty is given on Raditeq equipment. After you register your new Raditeq product two (2) years of warranty will be added for free resulting in three (3) years of warranty

Performance		All models
Temperature range		0° C - 40° C
Relative humidity		10 – 90% (non-condensing)
Power consumption		
Supply voltage		Power supplied through RadiCentre back panel
Power consumption		30 W max
Safety		
Interlock *		
(*RSW1022S/K/Q and RSW1024S/K/Q only)		Each relay of the plug-in card can be used as an interlock safety switch
Warranty		
Warranty		3 years (misuse excluded) ⁽²⁾

Models B & N - Plug-In cards with BNC and N-type connectors

Specification BNC, 3.0GHz, SPDT relays

Life time 1.000.000 cycles

Frequency	GHz	0 to 1	1 to 2	2 to 3
VSWR		1,15	1,20	1,25
Insertion loss	dB	0,15	0,20	0,25
Isolation	dB	85	80	75
Average power	W	400	300	240

Specification N-type, 12.4GHz, SPDT relays

Life time 1.000.000 cycles

Frequency	GHz	0 to 1	1 to 2	2 to 3	3 to 8	8 to 12.4
VSWR		1,15	1,20	1,25	1,35	1,5
Insertion loss	dB	0,15	0,20	0,25	0,35	0,5
Isolation	dB	85	80	75	70	60
Average power	W	700	500	400	250	200

Model S - Plug-In cards with SMA connectors

Specification SMA, 18GHz, SPDT relays

Life time 10.000.000 cycles

Frequency	GHz	0 to 3	3 to 8	8 to 12,4	12,4 to 18
VSWR		1,10	1,20	1,20	1,40
Insertion loss	dB	0,15	0,20	0,25	0,35
Isolation	dB	80	75	65	60
Average power	W	240	150	120	100

Specification SMA, 18GHz, SP6T relays

Life time 5.000.000 cycles

Frequency	GHz	0 to 3	3 to 8	8 to 12,4	12,4 to 18
VSWR		1,20	1,30	1,40	1,50
Insertion loss	dB	0,20	0,30	0,40	0,50
Isolation	dB	80	75	65	60
Average power	W	240	150	120	100

Model K - Plug-In cards with 2,92mm connectors

Specification k 2.92mm, 40GHz, SPDT relays

Life time 10.000.000 cycles

Frequency	GHz	0 to 6	6 to 12.4	12.4 to 18	18 to 26.5	26.5 to 40
VSWR		1,30	1,40	1,50	1,70	1,9
Insertion loss	dB	0,30	0,40	0,50	0,70	0.8
Isolation	dB	70	60	60	55	50
Average power	W	80	60	50	20	10

Specification k 2.92mm, 40GHz, SP6T relays

Life time 2.000.000 cycles

Frequency	GHz	0 to 6	6 to 12.4	12.4 to 18	18 to 26.5	26.5 to 40
VSWR		1,30	1,40	1,50	1,70	2.2
Insertion loss	dB	0,20	0,40	0,50	0,70	1.1
Isolation	dB	70	60	60	55	50
Average power	W	40	30	25	15	5

Model Q - Plug-In cards with 2,4mm connectors

Specification Q 2.4mm, 50GHz, SPDT relays

Life time 2.000.000 cycles

Frequency	GHz	0 to 6	6 to 12.4	12.4 to 18	18 to 26.5	26.5 to 40	40 to 50
VSWR		1,30	1,40	1,50	1,70	1,90	1,90
Insertion loss	dB	0,30	0,40	0,50	0,70	0,80	1,10
Isolation	dB	70	60	60	55	50	50
Average power	W	80	60	50	20	10	5

Specification Q 2.4mm, 50GHz, SP6T relays

Life time 2.000.000 cycles

Frequency	GHz	0 to 6	6 to 12.4	12.4 to 18	18 to 26.5	26.5 to 40	40 to 50
VSWR		1,30	1,40	1,50	1,70	1,90	1,90
Insertion loss	dB	0,30	0,40	0,50	0,70	0,80	1,10
Isolation	dB	70	60	60	55	50	50
Average power	W	80	60	50	20	10	5

Model V - Plug-In cards with 1.85mm connectors

Specification V 1.85mm, 67GHz, SPDT relays

Life time 2.000.000 cycles

Frequency	GHz	0 to 6	6 to 12.4	12.4 to 18	18 to 26.5	26.5 to 40	40 to 50	50 to 67
VSWR		1,30	1,40	1,50	1,70	1,90	1,90	1,90
Insertion loss	dB	0,30	0,40	0,50	0,70	0,80	1,10	1,10
Isolation	dB	70	60	60	55	50	50	50
Average power	W	80	60	50	20	10	5	3

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