

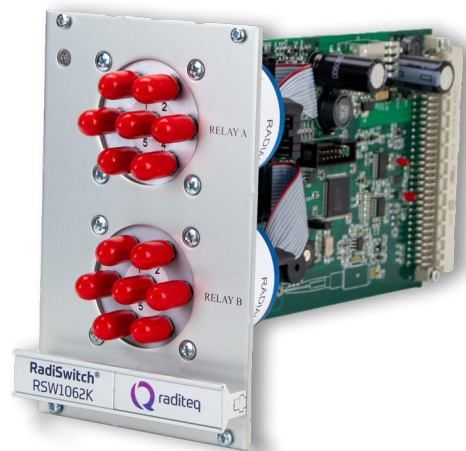


raditeq

Product Manual

RadiSwitch®

Coaxial RF Switch Card



Models:

RSW1022S/K/Q | RSW1024S/K/Q | RSW1061S/K/Q
RSW1062S/K/Q | RSW1021N/B | RSW2002E

www.raditeq.com

RadiSwitch® Product Manual

This product manual pertains to the RadiSwitch®.

Models: RSW1022S - RSW1022K - RSW1022Q - RSW1024S - RSW1024K - RSW1024Q - RSW1061S - RSW1061K - RSW1061Q - RSW1062S - RSW1062K - RSW1062Q - RSW1021N - RSW1021B - RSW2002E

Read this manual carefully before operating the product and make sure all the safety instructions are strictly followed.

For your convenience, a Quick Start Guide has been added to this product. This Quick Start Guide contains the basic start-up steps and the safety warnings.

Please keep the Quick Start Guide (and this regular manual) close at hand when you operate your new Raditeq product(s).

Please contact your local reseller if you have any questions.

Supplier Information

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WARNINGS & PRECAUTIONS



Read the contents of this product manual carefully and become familiar with the safety markings, the product instructions and the handling of the system. Please refer to the applicable product manual(s) for further information regarding the operation and control of the product(s).



This equipment is designed to be used as a plug-in card for the RadiCentre® series. Do not use this card on its own or in combination with any other mainframe. Using this product with any other mainframe can cause harm and will void warranty.



Only Raditeq qualified maintenance personnel is allowed to perform maintenance and/or repair service on the equipment.



Position the product in such a fashion that power cables are easily accessible or connect the equipment to a mains network that can be easily disconnected from the mains.



The RF power should always be removed and turned off before switching the relay (Cold Switching). This does not apply when used as a safety switch.



For cleaning, use a clean, dry cloth (or a damp cloth where needed) and wipe the surface of equipment.



This product contains no hazardous substances as described in the RoHS Directive (2015/863/EU).



This product contains embedded software, which is field upgradeable from the RadiCentre® using the USB-A connection port on the backside panel of the RadiCentre®. For more information about updating your Raditeq plug-in card, please read the RadiCentre® manual.



This product® contains materials that can be recycled and reused to minimize material waste. At the 'end-of-life', specialized companies can dismantle the discarded system to collect the reusable and recyclable materials. If your product is at its 'end-of-life', please return it to your local reseller or to Raditeq for recycling.

Introduction

The RadiSwitch® is a multi-channel, coaxial switch plug-in card designed to switch the RF signals within an (automated) test system.

Typical applications for the RadiSwitch® multi-channel, coaxial switch are:

- Switching the RF path of signal generators, amplifiers and/or antennas test systems.
(E.G. Radiated and/or, conducted immunity testing or telecom)
- Switching the RF path of LISN or antenna to the receiver in conducted and radiated emission test systems.
- Safety switching to prevent entering hazardous radiated environments like anechoic chamber(s).
(Only applicable for the RSW1024 and RSW1022 Series)
- Any other RF switching application, like telecom test systems.



RadiCentre® system

The RadiCentre® is a modular EMC/RF test system that serves as the user interface for all the RadiCentre® plug-in cards and modules. The RadiCentre® can be connected to RadiMation for fully automated testing.



RadiMation® Automated EMC/RF Test Software

RadiMation® is the EMC software package from Raditeq. RadiMation is used for remote control and automated RF and EMC testing. In combination with the RadiCentre® the software really shines brightest and enables the user fully automated and effective EMC and RF testing. Plug-in cards and modules are sold separately.

The RadiSwitch®

The RadiSwitch® plug-in cards is available in a wide variety of models to meet the requirements of most test setups for RF applications. (E.G. EMC applications, Telecom application, safety switching.)

RadiSwitch® models

The RadiSwitch® is available in the following models; the S, K, Q, N, B and E types. The distinction of each lies in the frequency range, power handling and connector type.

Please read the table below regarding the RadiSwitch® models.

Model	Description
RSW1021B	RadiSwitch® RF switch plug-in card 1x SPDT relay, BNC 3GHz
RSW1021N	RadiSwitch® RF switch plug-in card 1x SPDT relay, N-type 12.4GHz
RSW1022S	RadiSwitch® RF switch plug-in card 2x SPDT relay, SMA 18GHz
RSW1024S	RadiSwitch® RF switch plug-in card 4x SPDT relay, SMA 18GHz
RSW1061S	RadiSwitch® RF switch plug-in card 1x SP6T relay, SMA 18GHz
RSW1062S	RadiSwitch® RF switch plug-in card 2x SP6T relay, SMA 18GHz
RSW1022K	RadiSwitch® RF switch plug-in card 2x SPDT relay, 2.92mm (k) 40GHz
RSW1024K	RadiSwitch® RF switch plug-in card 4x SPDT relay, 2.92mm (k) 40GHz
RSW1061K	RadiSwitch® RF switch plug-in card 1x SP6T relay, 2.92mm (k) 40GHz
RSW1062K	RadiSwitch® RF switch plug-in card 2x SP6T relay, 2.92mm (k) 40GHz
RSW1022Q	RadiSwitch® RF switch plug-in card 2x SPDT relay, 2.4mm (Q) 50GHz
RSW1024Q	RadiSwitch® RF switch plug-in card 4x SPDT relay, 2.4mm (Q) 50GHz
RSW1061Q	RadiSwitch® RF switch plug-in card 1x SP6T relay, 2.4mm (Q) 50GHz
RSW1062Q	RadiSwitch® RF switch plug-in card 2x SP6T relay, 2.4mm (Q) 50GHz
RSW2002E	RadiSwitch® RF switch plug-in card 2x external relay driver card 12V/24V/28V

Interlock functionalities

The models RSW1022S/K/Q and RSW1024S/K/Q are equipped with an interlock connection. This interlock can operate any relay of the card, selected by DIP switches.

When one of the relays is used as a safety interlock relay, it can be used to switch of the RF input signal to the RF amplifier. The RF interlock input can, for example, be activated by a switch mounted on the entrance door of the test chamber. This can prevent personnel from being subjected to high RF fields. This interlock input is fully integrated in the hardware, software cannot overwrite this safety system.

RadiSwitch® model	RadiCentre® slots taken
All RSW106xx models	2 slots
All RSW102xx models (+ RSW2002E)	1 slot

Components

The RadiSwitch® is delivered with the following items:

- RadiSwitch® plug-in card | Multi-channel, coaxial switch plug-in card to be used in the RadiCentre® system.
- Interlock plug (only for models RSW1022S/K/Q and RSW1024S/K/Q)
- Supporting documentation consists of a USB containing:
 - The RadiSwitch® Product Manual (digital)
 - The RadiSwitch® Quick Start Guide (digital)

Connection and markings

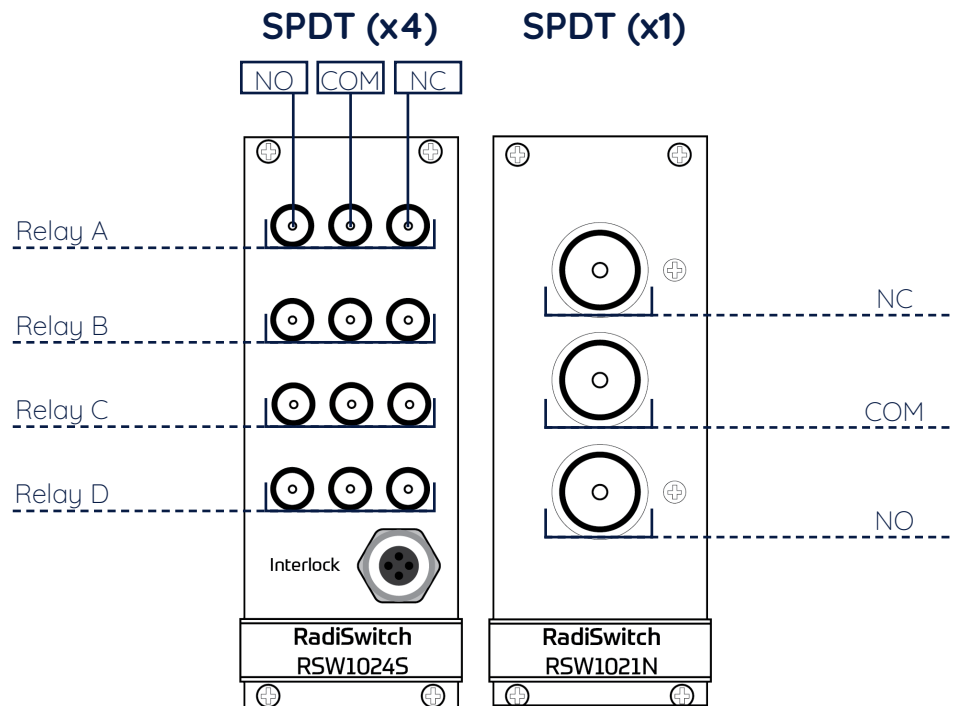
The RadiSwitch® has the following Connections:

- SPDT
- SP6T
- External Relay

*An overview of the connections with corresponding model can be found at page 6 and at the specifications.

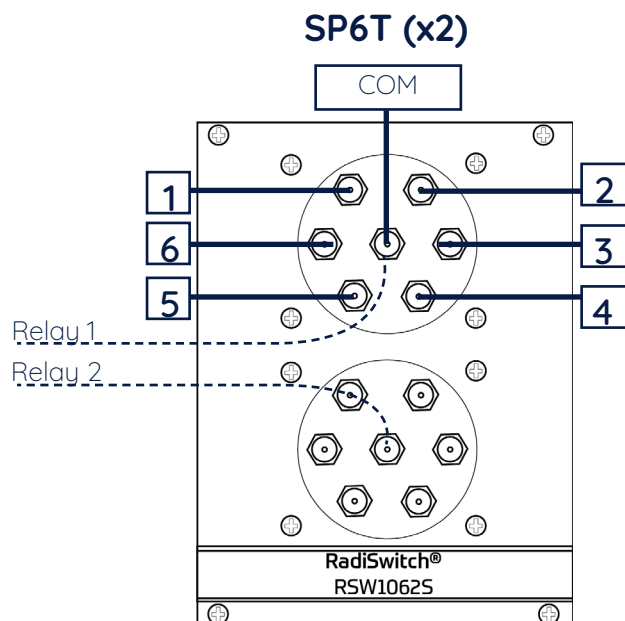
The Connections of the SPDT

The connections of the SPDT (Single Pole Double Throw) relays are marked with “NO”, “COM” and “NC” for respectively Normally Open, Common and Normally Closed. These terms indicate the position of the relay. When not activated, the relay connects the COM to the NC connector. When energized, the relay connects the COM to the NO connector.



The connections of the SP6T (Single Pole 6-Throw)

The centre connector is the COM (Common). The other connections are numbered from 1 to 6, this is visible in the illustration below and on the relay itself.



Model E - Plug-In card to drive external relays

When the models with internal relays do not fit the needs (E.G. high-power switching). There is the RSW2002E, this plug-in card is designed to use with external relays and can drive up to two (2) SP6T relays. It provides a user selectable supply of 12V, 24V or 28V, with a maximum current of 0.5A per relay (voltage independent). The RSW2002E is also equipped with indicator contacts, these can provide feedback to the user on the state of the relay.

Connector

The RSW2002E is shipped with four (4) connectors* to mate with the plug-in card connectors. A 2x8-way terminal block is used for each relay driver. The left row is used for energizing the coils (please note that only one coil can be active at a time). The right row is used for the readback contacts of the relays. The connections for the indicator contacts are optional and can be enabled or disabled in the configuration screen of the switch card.

Coil connections

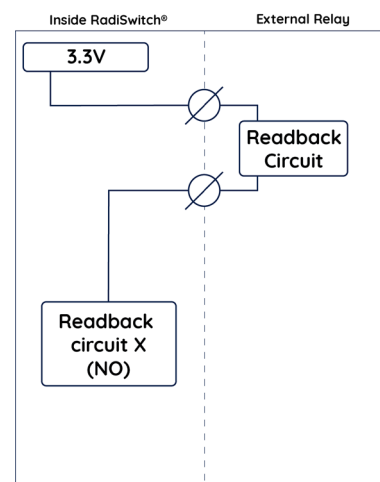
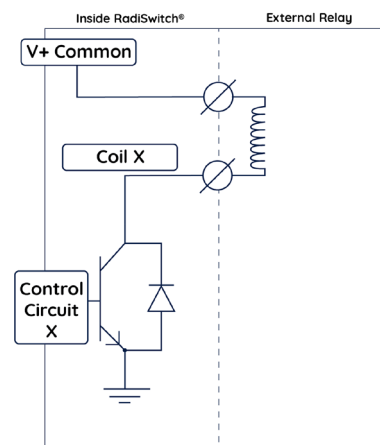
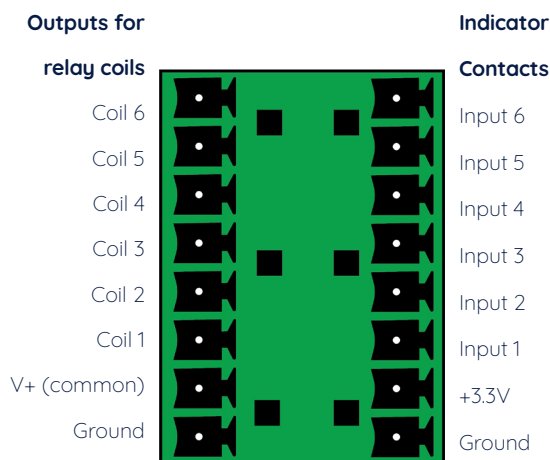
The relay coil(s) must be connected on the left row between the V+ (common) and one of the six coil connections. The V+ is a user selectable 12V, 24V or 28V. The voltage can be set in the configuration screen of the RadiSwitch® plug-in card**. The coil connections are open collector outputs which connect the coil to ground when activated, thus energizing the relay coil.

Indicator connections

Some relays are equipped with indicator contacts, these contacts indicate the position of the relay. The indicator contacts can be connected on the right row. The indicator contacts can be connected between the +3.3V and the corresponding input channel (the input channel corresponds to the same coil number).

*part number: Phoenix Contact MC 1,5/ 8ST3,81

****IMPORTANT!** - Make sure that the correct voltage is set before connecting the relay. Wrong settings may result in permanent damage to the relay!

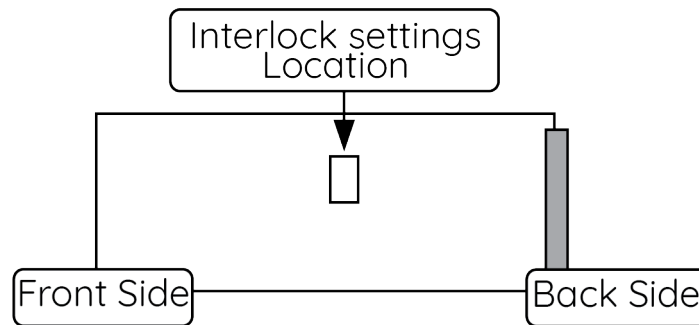


Interlock

The RadiSwitch is equipped with an interlock connector on the plug-in card itself (only applicable to the RSW1022X and RSW1024X). This connector has two floating connections, these connections set the state of the interlock. When the connections are closed the interlock is not active, the interlock is active when the connections are open.

The main function for this interlock is to use a relay as a safety interlock relay. In this case the interlock must be connected to the safety system of the test environment. When the safety system is activated, the interlock contacts are open. This will set the relay to the NC position and can route the RF to a safe termination. When the safety system is de-activated (closed on the interlock) the relay will switch back to the selected setting.

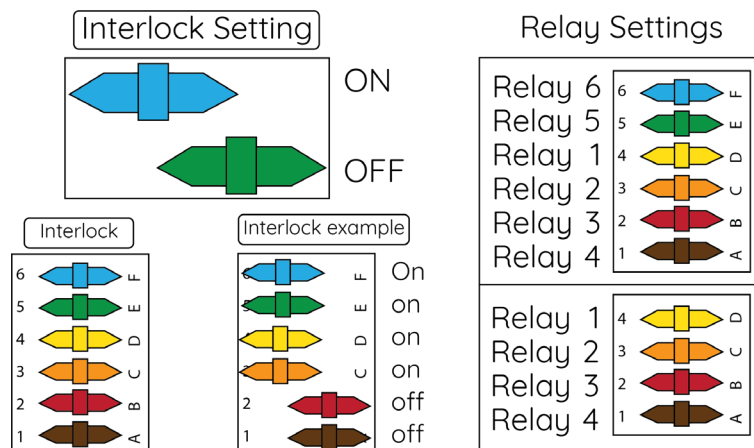
The Interlock is for each type located in the same general location displayed on the illustration.



The interlock functionality can be turned on or off, for each relay independently. This is done by DIP switches or by jumpers (model version dependant).

DIP switch

When the DIP switch is positioned left it makes the relay interlock dependant, when positioned to the right the interlock is disabled. Each relay is represented by a colour coded DIP switch. For convenience the table is also



printed in silkscreen on the PCB.

IMPORTANT: The number displayed on the switch do not always correspond to the same number relay switch. Always use the Relay settings as the base for setting the correct interlock settings.

Jumper

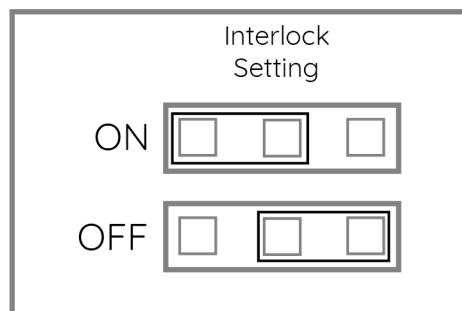
When the jumper is connected between the middle and left row, the relay is interlock dependant. When the jumper is positioned between the middle and the right row it disables the interlock. For convenience the table is also printed in silkscreen on the PCB

*By default, relay 1 is set to active and thus usable as a safety relay (for both versions).

The interlock circuit is implemented in hardware and do not require any intervention from the software. Moreover, when activated it overwrites the current (software) selected setting. The software can detect an interlock and displays the status on the RadiCentre®, the software is only able to display the interlock status, it does not intervene.

An example where the safety relay is used to prevent exposure of high field strengths in a test chamber is described below.

In this case the selected safety relay is connected to the output of a power amplifier on the “COM” connector, the “NO” is connected to an antenna and the “NC” is connected to a termination, the interlock is connected to a door contact. When the door contact is closed the interlock will see a closed system and the relay is able to switch the power from the antenna and the load. When the door contact is open (an engineer opens the door). The interlock is open, and the relay will switch to the NC state. The power of the amplifier will be connected to the termination instead of the antenna and thus preventing high field levels in the open chamber. When the door closes the interlock will be closed and the relay is able to switch back to the NO position.

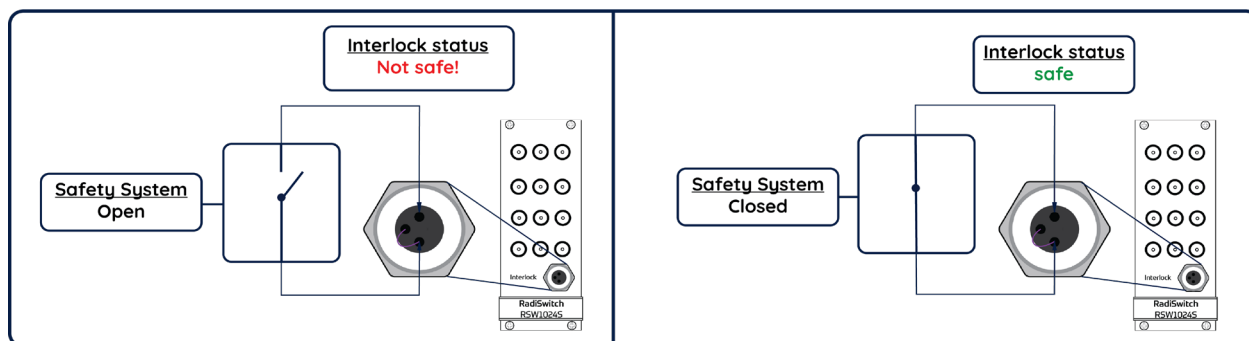


Interlock

Relay 6	■	■	■
Relay 5	■	■	■
Relay 1	■	■	■
Relay 2	■	■	■
Relay 3	■	■	■
Relay 4	■	■	■

Interlock example

Relay 6	■	■	■	ON
Relay 5	■	■	■	OFF
Relay 1	■	■	■	OFF
Relay 2	■	■	■	ON
Relay 3	■	■	■	OFF
Relay 4	■	■	■	ON



Hardware installation



Make sure that when installing and removing a RadiCentre® plug-in card the RadiCentre® system is turned off.

Please follow the instructions below on how to install the Raditeq plug-in card into the RadiCentre® correctly. **NOTE:** before installing and inserting a new plug-in card make sure that the RadiCentre® is turned OFF.

Step 1

Choose an empty slot in the RadiCentre® in which the plug-in card can be installed. Remove the blind panel from the slot by unscrewing the four (4) screws on the panel (two at the top and two at the bottom).

Step 2

Insert the plug-in card in the rail of the empty slot as shown in the picture A. Position the plug-in card into the slot and slowly push it, using the lower part of the plug-in card. When it reached the end of the rail, gently push and secure the plug-in card into the backplane socket.

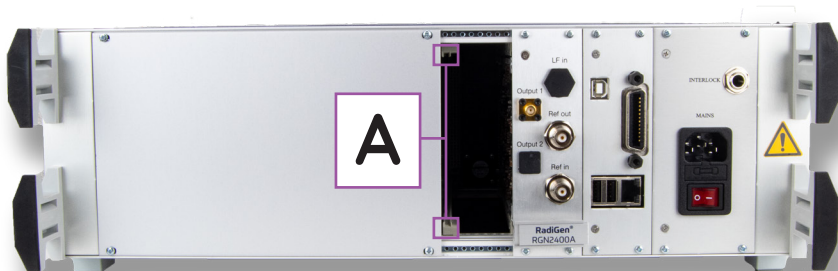
Step 3

When the plug-in card is inserted correctly into the backplane socket, fix it by tightening the four screws at the top and the bottom of the plug-in card (shown at B). For connection of the panels into the RadiCentre® a screwdriver type Pozi, size PZ1 should be used.

Step 4

After installation of the plug-in card, connect the AC mains power cord on the back of the RadiCentre® and switch the ON/OFF button to the ON position. The RadiCentre® can now be started by tapping the touch screen.

When installed properly, the plug-in card should be recognized and shown automatically on the front screen of the RadiCentre® when turned ON.



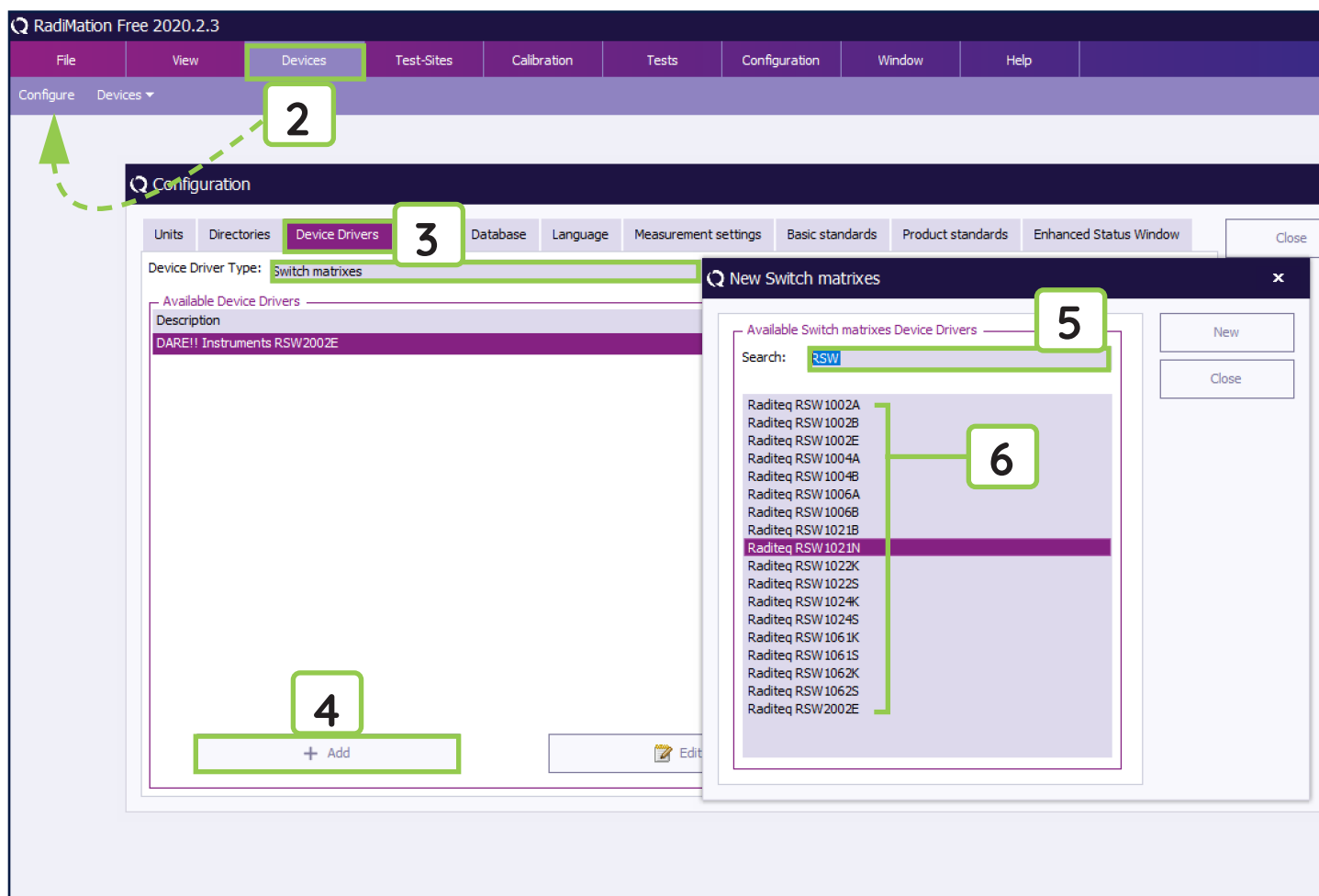
Software Configuration

In order to control the RadiSwitch® from a computer, either custom made software, third party software or the RadiMation® EMC software package can be used. RadiMation® from Raditeq is sold separately. If the RadiSwitch® is operated manually, this chapter can be skipped.

The RadiSwitch® is part of the “Switch matrixes” device driver family

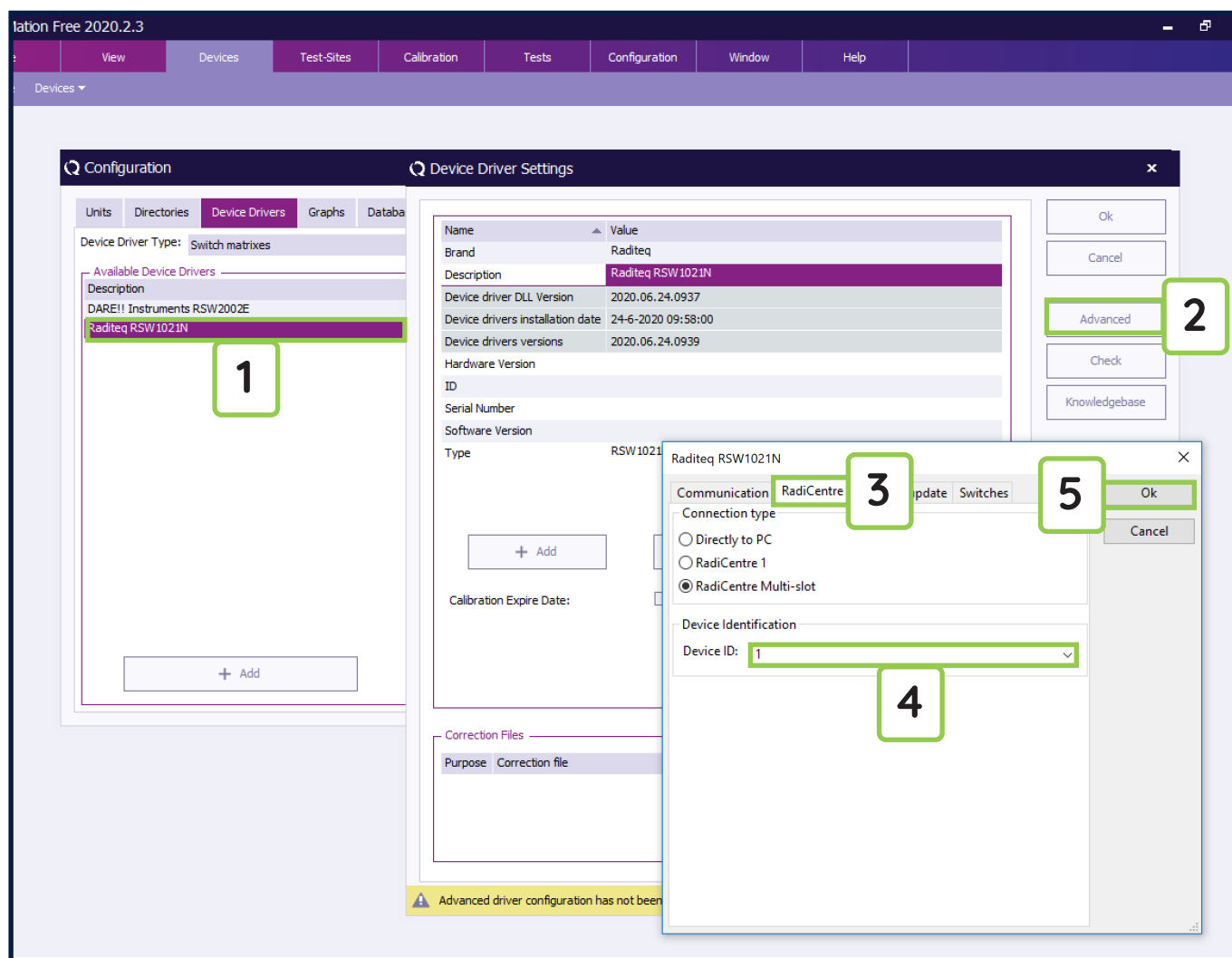
How to configure the RadiSwitch® in RadiMation®

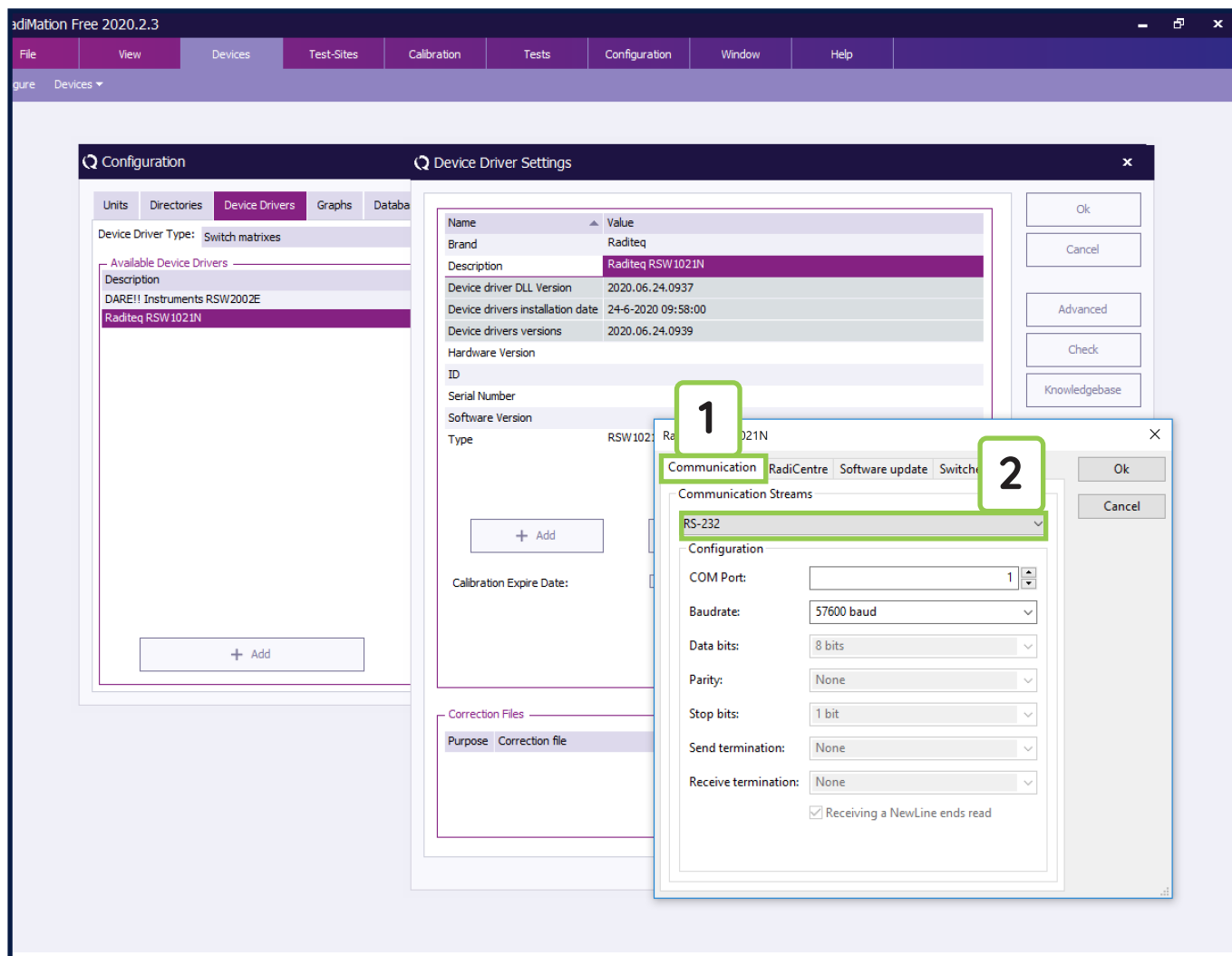
1. Start the latest version of RadiMation®; [Download the at www.raditeq.com/radimation-download/](http://www.raditeq.com/radimation-download/).
2. Select the button ‘Device’ at the top menu bar, followed by clicking ‘Configure’;
3. In the configuration screen select ‘Device Drivers’ and select ‘Switch Matrixes’ as driver type;
4. Click the ‘Add’ button to open the selection of available drivers in RadiMation®;
5. Enter ‘RSW’ in the search bar which will automatically show all available RadiSwitch® drivers;



How to connect the RadiSwitch® to the RadiCentre®

1. Select the recently added RadiSwitch® driver
2. Select 'Advanced'
3. Click on the tab 'RadiCentre®' under device identification and select the RadiCentre® slot number the RadiSwitch® plug-in card is installed in.
4. When the correct slot number is chosen, continue to set the communication of the RadiSwitch® by clicking 'Ok'.



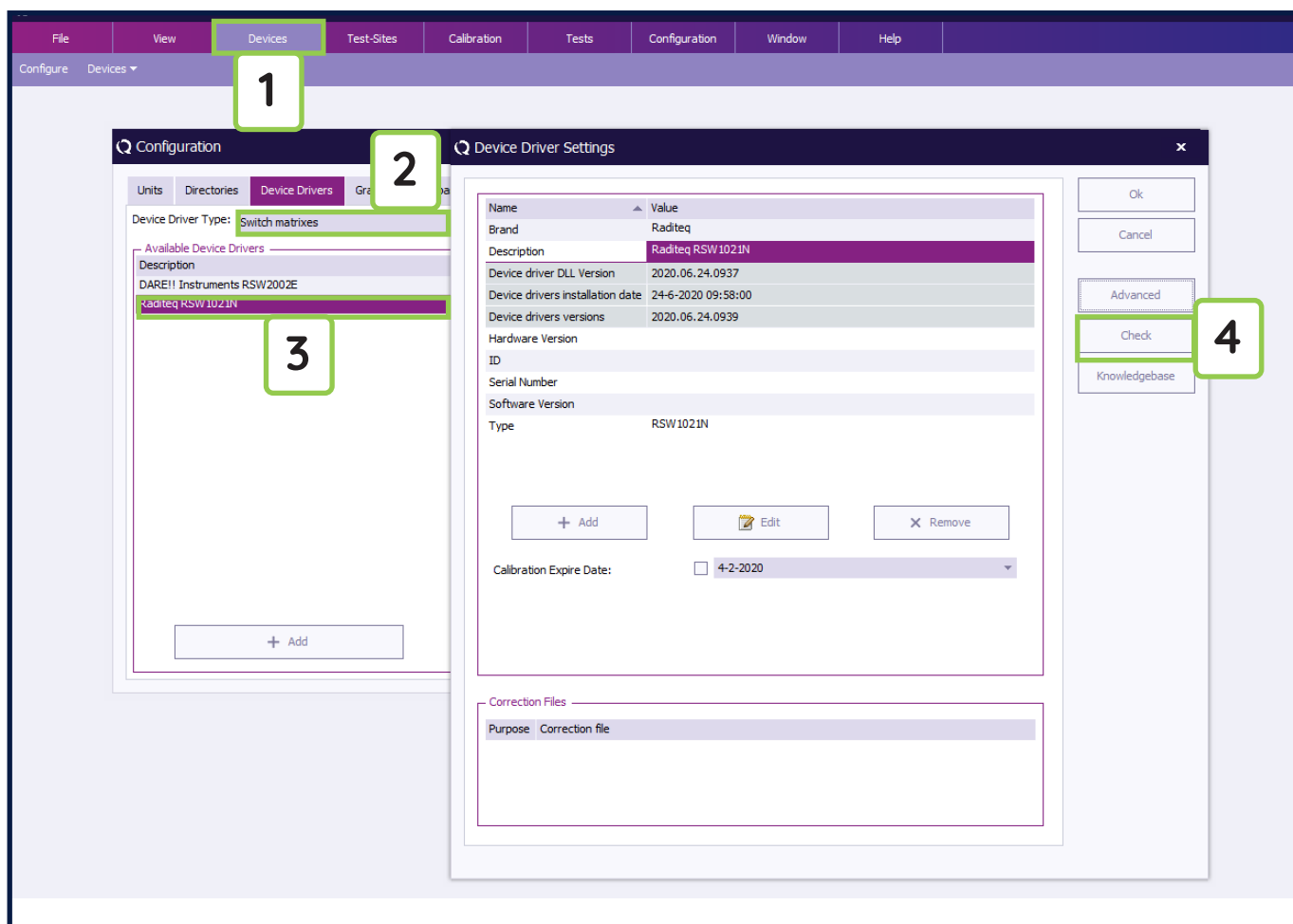


How to setup the communication of the RadiSwitch® to the RadiCentre®

1. Click on the tab 'Communication'
2. Select the interface to used, for example:
 - GPIB
 - TCP/IP
 - USB
 - VISA
3. When these steps are performed continue to the next steps for checking the communication of the RadiSwitch®.

How to check if the RadiSwitch® is properly connected to RadiMation®

1. Select 'Devices' in the top menu bar
2. Open 'Device Drivers' and select Device driver Type: 'Switch Matrixes'
3. Double click the recently configured RadiSwitch® or click 'Edit'.
4. Finally select the 'Check' button on the right side of the opened screen.
5. When correctly configured, RadiMation will notify you that the device is correctly installed.



Important information

When you need support with the configuration of your Radi-Product in RadiMation®, please consult the RadiMation® support team at: Support@radimation.com.

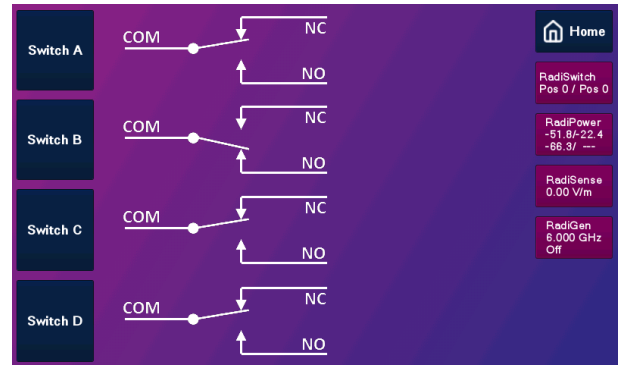
It is also advised to visit the RadiMation® Wiki page and the FAQ section, which can be found at: <https://wiki.radimation.com>

RadiMation® software can be downloaded at: <https://www.raditeq.com/emc-test-software/radimation-download>

Control of the RadiSwitch®

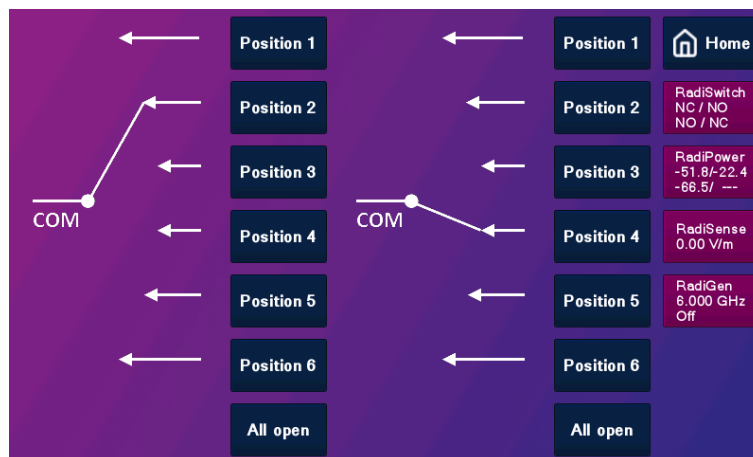
Manual Control

Once the RadiCentre® is switched on, the RadiSwitch® can be activated from the 'main' screen on the RadiCentre® touchscreen. To control the RadiSwitch®, start by pressing the 'status' button of the RadiSwitch® in the 'main' screen. A control screen for the RadiSwitch® will appear in which changes to the positions of the relays can be made. An example of a screen for a 4 x SPDT relay card is shown below..



By pressing the 'Switch A' button on the left side of the screen, the relay switch symbol next to it will toggle between the 'NO' and 'NC' position. The same functionality is true for the other three switch buttons (switch B, C and D). In case of a failure, an error will be displayed in the screen.

Operating a RadiSwitch® plug-in card with SP6T relays is done in a similar way. An example of a screen for a 2 x SP6T relay card is shown below. By pressing the button next to the desired position of the relay, the relay will switch to this specific position. For example, if the button 'position 3' is pressed, the switch symbol and relay will switch to position 3.



Remote control

The RadiSwitch® can be controlled remotely through the interfaces of the RadiCentre®. The exact communication protocol and specific commands for the RadiSwitch® can be found in the RadiCentre® manual.

RadiSwitch® errors

All RadiSwitch® error codes are displayed on the RadiCentre® display and explained in the RadiCentre® Manual.

Relay errors

The RadiSwitch® checks the following error conditions of the internal relays.

Switching error

Each internal relay has a set of indicator contacts. These are used to check whether a relay has really changed to the set position. A “Switching error” message will appear if no change in position is detected.

Interlock open for safety interlock relay

If the interlock of a relay is opened, a “Safety interlock open” error will appear for the corresponding relay.

RadiSwitch® Command Set

Commands for SPDT relays

Command	Reply	Description
"INT_RELAY_<R>?"	"NO", "NC" or "ERROR xxx" (See error codes)	Returns the status of internal relay <R>, with: <R> = "A", "B", "C" or "D"
"INT_RELAY_<R> _NO"	"NO" or "ERROR xxx"1 (See error codes)	Switches the internal relay <R> to the Normally Open (NO) position, with: <R> = "A", "B", "C" or "D"
"INT_RELAY_<R> _NC"	"NC" or "ERROR xxx"1 (See error codes)	Switches the internal relay <R> to the Normally Closed (NC) position, with: <R> = "A", "B", "C" or "D"
"INT_TEMPERATURE_<R>?"	"x" (in Celsius degrees)	Returns the temperature between the internal relays in degrees Celsius * 10, with: <R> = "A", "B", "C" or "D"

Commands for SPDT relays

Command	Reply	Description
"INT_RELAY_<R>?"	"NO", "NC" or "ERROR xxx" (See error codes)	Returns the status of internal relay <R>, with: <R> = "A", "B", "C" or "D"
"INT_RELAY_<R> _NO"	"NO" or "ERROR xxx"1 (See error codes)	Switches the internal relay <R> to the Normally Open (NO) position, with: <R> = "A", "B", "C" or "D"
"INT_RELAY_<R> _NC"	"NC" or "ERROR xxx"1 (See error codes)	Switches the internal relay <R> to the Normally Closed (NC) position, with: <R> = "A", "B", "C" or "D"
"INT_TEMPERATURE_<R>?"	"x" (in Celsius degrees)	Returns the temperature between the internal relays in degrees Celsius * 10, with: <R> = "A", "B", "C" or "D"

Commands for external relays

Command	Reply	Description
"EXT_RELAY_<R>?"	"0", "1", "2", "3", "4", "5", "6" or "ERROR xxx"	Returns the status of internal relay <R>, with: <R> = "A" or "B"
"EXT_RELAY_<R>_n"	"0", "1", "2", "3", "4", "5", "6" or "ERROR xxx"	Switches the internal relay <R> to position <n>, with: <R> = "A" or "B" If 0 is returned, none of the outputs are active.
"EXT_CURRENT?"	"xx mA"	Returns the total current consumption of the external relays in mA.
"EXT_VOLTAGE_<V>"	"OK"	Sets the supply voltage for external relays, with: <V> = "12", "24" or "28"
"EXT_VOLTAGE?"	"12V", "24V" or "28V"	Returns the supply voltage for external relays.
"EXT_READBACK_A_ON"	"OK"	Enables the use of indicator contacts of external relay A.
"EXT_READBACK_A_OFF"	"OK"	Disables the use of indicator contacts of external relay A.
"EXT_READBACK_A?"	"ON" or "OFF"	Returns if the indicator contacts of relay A are used.
"EXT_READBACK_B_ON"	"OK"	Enables the use of indicator contacts of the relay B.
"EXT_READBACK_B_OFF"	"OK"	Disables the use of indicator contacts of external relay B.
"EXT_READBACK_B?"	"ON" or "OFF"	Returns if the indicator contacts of relay B are used.

RadiSwitch® specifications

- All Specifications assume a room temperature (25°C)
- All power specifications assume a unity VSWR (Matched load)

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

There are two RadiSwitch® plug-in cards available for RF signals with higher power levels. The RSW1021B with BNC-connectors and the RSW1021N with a N-type connector. Both models use one SPDT relay. The N-type can be used for power levels up to 700 Watt.

The main specifications of these models are detailed below.

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

There are four models available with relays using SMA connectors. These relays can be used up to 18 GHz. The RSW1022S and RSW1024S models use respectively two (2) and four (4) SPDT relays and the RSW1061S and RSW1062S use respectively one (1) and two (2) SP6T relays.

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

There are four (4) models available for the model K with 2,92mm (K- type connectors). These relays can be used for frequencies up to 40 GHz. The RSW1022K and RSW1024K use respectively two (2) and four (4) SPDT relays and the RSW1061K and RSW1062K use respectively one (1) and two (2) SP6T relays.

The main specifications of these models are detailed below.

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

There are four (4) models available for the model Q with 2,4mm (Q- type connectors). These relays can be used for frequencies up to 50 GHz. The RSW1022Q and RSW1024Q use respectively two (2) and four (4) SPDT relays and the RSW1061Q and RSW1062Q use respectively one (1) and two (2) SP6T relays.

The main specifications of these models are detailed below.

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

RadiSwitch® specifications - continued

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
External relays		2 external relays can be driven, max current 0,5A per relay 12V, 24V or 28V user selectable.
Models		
RSW1021N		1 coaxial switch SPDT, N-type 12.4 GHz (1 slot)
RSW1021B		1 coaxial switch SPDT, BNC-type 3 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)
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

Models	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 and RSW1024S/K only)	Each relay of the plug-in card can be used as an interlock safety switch
Warranty	
Warranty	3 years (misuse excluded) ⁽²⁾

- ⁽¹⁾ Unless otherwise noted, all specifications are measured after 10 minutes warm up time and with 0 dBm output level.
- ⁽²⁾ Three years warranty will be granted only after you register your product at www.raditeq.com. Without registration, a 1 year warranty period applies.

Warranty Conditions

Raditeq B.V. offers a standard warranty term of three (3) years on their products, calculated from the shipping date, under the condition that the product is registered on www.raditeq.com. For registration of the product, the customer should provide the product model, serial number and the responsible reseller (if applicable). If the product is not registered, a limited warranty term of one (1) year will be applicable.

Return Material Authorization (RMA) & Warranty repair

If a defect occurs to our product within the warranty term, a Return Material Authorization (RMA) 'Warranty Repair' request can be issued using the RMA link at www.raditeq.com/support. Upon receipt of the request, an RMA number will be provided. Please do not send the product without this RMA number! The defective product should be shipped to our service department at the following address:

Raditeq B.V. – Service Department
Vijzelmolenlaan 3
3447GX WOERDEN
The Netherlands

There will be no charge for repair services (materials or labour) within the (extended) warranty term.
These warranty terms are not applicable to:

- Normal wear and tear
- Fibre optic cables
- Products that have been improperly used
- Products that have been used outside their specified range
- Products that have been improperly installed and/or maintained
- Products that have been modified without approval of Raditeq
- Calibration and/or re-calibration of the product

Repair services on products that are not covered by the Raditeq warranty will be charged to the customer.

Repairs outside warranty

If a defect is not covered under warranty, an RMA fixed-repair can be ordered on the RMA link: www.raditeq.com/support. If a re-calibration is needed after repair, this calibration should be ordered separately. The calibration will be performed at the ISO17025 accredited calibration laboratories of DARE!! Calibrations, based on the applicable service code / prices.

Warranty after repair

For repairs outside the original warranty period, a limited warranty of six months is applicable on the performed repair. Shipping conditions are the same as with repairs that are covered within the original warranty period.

Shipping

The customer will need to arrange shipping and cover for the costs (like e.g. transportation costs, duties, taxes) for sending the defect product the service department of Raditeq in The Netherlands. Raditeq will arrange the courier and cover for the costs for the return shipment after repair.

EU Declaration of Conformity

We

Raditeq B.V.

of

Vijzelmolenlaan 3
NL-3447GX Woerden
The Netherlands

declare under our sole responsibility that the

Product: RadiSwitch®

Models: RSW1022S - RSW1022K - RSW1022Q - RSW1024S - RSW1024K - RSW1024Q - RSW1061S
RSW1061K - RSW1061Q - RSW1062S - RSW1062K - RSW1062Q - RSW1021N - RSW1021B -
RSW2002E

are in accordance with the European Directives:

EMC Directive 2014/30/EU

RoHS Directive: 2015/863/EU

per the provisions of the applicable requirements of the following harmonized standards:

Emission: EN 61326-1:2013, Class A1
Electrical equipment for measurement, control and laboratory use.

Immunity: EN 61326-1:2013, Industrial level, performance criteria A
Electrical equipment for measurement, control and laboratory use.

The technical construction files are maintained at the adress specified above.

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Place of issue: Woerden, The Netherlands

Authorized by: P.W.J. Dijkstra

Title of authority: Director



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