

User Manual

RSS 3000

ti DualInventive

Ubiquitous Rail



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1 Version History

VERSION NO.	DATE	CHANGE LOG	REFERENCE	APPROVED
0.1	01.12.2022	Initial Version	All	<u>Alex Ruijs</u>
0.2	10.05.2023	Updated Pictures and Tech Specs	All	<u>Alex Ruijs</u>
0.3	10.08.2024	Revised based on feedback from users and developers	All	<u>Alex Ruijs</u>
0.4	09.09.2024	Proofread, New Images	All	<u>Alex Ruijs</u>

2 PREFACE

The RSS 3000 is purposefully designed to fulfill its function(s).

Carefully read and understand this manual to ensure proper product. Keep this manual within close proximity of the RSS 3000, for quick reference during usage.

This manual is integral to the RSS 3000. In case of resale or trade-in, it must accompany the product.

Should you encounter any uncertainties while using the RSS 3000, please report them promptly to info@dualinventive.com or phone contact. Your feedback enhances safety and optimizes rail capacity distribution. To support the RSS 3000, Dual Inventive offers accessible resources and assistance at www.dualinventive.com.

No rights can be derived from the information in this user manual. Reproducing or distributing manual content in printed, written, audiovisual or any other form without Dual Inventive's prior authorization is prohibited.

Dual Inventive has originally written this manual in English. If anything is unclear or deviates from the original in a translated version, the original English version prevails.

2.1 Purpose of the User Manual

This user manual serves as a comprehensive guide for the correct use of the safety device, RSS 3000.

This user manual contains instructions regarding the:

- Personal safety and product safety that must be observed to avoid risks that could lead to physical and/or property damage;
- Use of the RSS 3000;
- Storage of the RSS 3000;
- Disposal of the RSS 3000.

2.2 User Roles for the RSS 3000

Typical user roles of the RSS 3000 are:

- The work planner who prepares safety plans and assigns the locations for installing the RSS 3000 in the relay cabinets;
- The installer, the track worker who installs the RSS 3000 on the railway track;
- The operator, the track worker who switches the RSS 3000 on the railway track.

USER ROLES	FUNCTIONS
Infrastructure Controller	The person who decides what infrastructure assets or area of track layout requires the installation of an RSS 3000 to protect the track workers.
Installer	Installs the RSS 3000 on the railway track.
Signaling Designer	Uses the infrastructure controllers signalling design principles, designs the interface connections and wiring installation between the RSS 3000 and the signal interlocking to provide the required protection area for track workers.
Work Planner	Prepares safety plans based on the currently installed RSS 3000.
Operator	the track worker who switches the RSS 3000 on the railway track.

Every user of the RSS 3000 must meet the following requirements:

- certified to work with the RSS 3000 except the Infrastructure Controller and the Signaling Designer;
- authorized by the user company's perspective for the right access and user rights for MTinfo 3000.

After certification, the user receives a personal MTinfo 3000 account for the RSS 3000 with the assigned user rights. Certified users are always responsible for keeping the username, password and/or PIN code confidential. is the user is not allowed to share this data.

2.2.1 Vulnerable persons

The RSS 3000 may not be used by persons:

- With reduced physical, sensory, or mental capabilities;






2.3 User Manual Convention

Please read this user manual fully. Make sure that you understand its content. In principle, every user should read the whole user manual. Depending on the user, some sections are more relevant for the:

- Installer: section 7;
- Work planner: section 8;
- Operator: section 9.

The RSS 3000 is supported by the web interface MTinfo 3000 and the app. The work planner will frequently use MTinfo 3000 web, and operator will frequently use the app.

To alert the reader to safety issues and essential information, the following symbols and terms are used in this manual:

SYMBOL	MEANING
	DANGER Indicates a hazardous situation which will result in death or serious injury if the safety instructions are not followed.
	WARNING Indicates a hazardous situation which could result in death or serious injury and/or damage to the product or the surrounding area if the safety instructions are not followed.
	CAUTION Indicates a hazardous situation which could result in minor and/or moderate damage to the product or the surrounding area if the safety instructions are not followed.
	NOTE Provides essential information.
	NOTE Refers to a document.

2.4 Related Documents

The following documents are referenced in this manual:

- User manual MTinfo 3000 web;
- User manual MTinfo 3000 app;

3 INTRODUCTION

3.1 Intended Use

The RSS 3000 is a highly reliable (Safety Integrity Level 4 (SIL4)) remote control safety switch. It's purpose is to provide protection to railway track workers by securing railway signaling equipment to a safe state providing a safe area for track workers to undertake railway works. Switching is independent of the railway signaller/despatcher/controller. It is designed to be electronically connected to existing railway signal interlockings. Furthermore an RSS 3000 can be used in conjunction with other RSS 3000 and ZKL 3000 RC remote control track circuit operating devices, to provide flexible and larger areas of protection for track workers.

The RSS 3000 is intended to activate and deactivate railway signal interlocking relays, which in turn set a signal in track to danger or safe. The RSS 3000 is a safety device.

3.2 Non-intended Use

Any other use than the intended use is prohibited.



WARNING

Non-intended use could have consequences for personal safety and can cause material damage to the RSS 3000 and its surroundings.



NOTE

In case of non-intended use, the warranty of the RSS 3000 expires.

3.3 Specifications

3.3.1 Technical specifications

Features

- Protects a section of a track by remote control switching of a predesigned and installed signal interlocking circuit independently of the railway signaling controller/despatcher/signaler. Can be operated remotely and manually.
- Can be remotely switched and monitored through Dual Inventive's cloud based electronic control platform MTinfo 3000.

SPECIFICATION	VALUE
Switch properties	<ul style="list-style-type: none"> • Latching relays • Contact rating: 3A • Switching voltage 250VAC • Breaking capacity 1250VAC (Resistive)
Input range	<ul style="list-style-type: none"> • 85 - 265VAC 50Hz / 60Hz
Telecommunication	<ul style="list-style-type: none"> • default: 4G network • fallback: 2G network
Safety Integrity Level	<ul style="list-style-type: none"> • SIL 4
IP protection level	<ul style="list-style-type: none"> • IP 51
Operating temperature range	<ul style="list-style-type: none"> • -20 to 60 °C
Weight	<ul style="list-style-type: none"> • 760 g

Table 3-1: Specifications

3.3.2 Dimensions

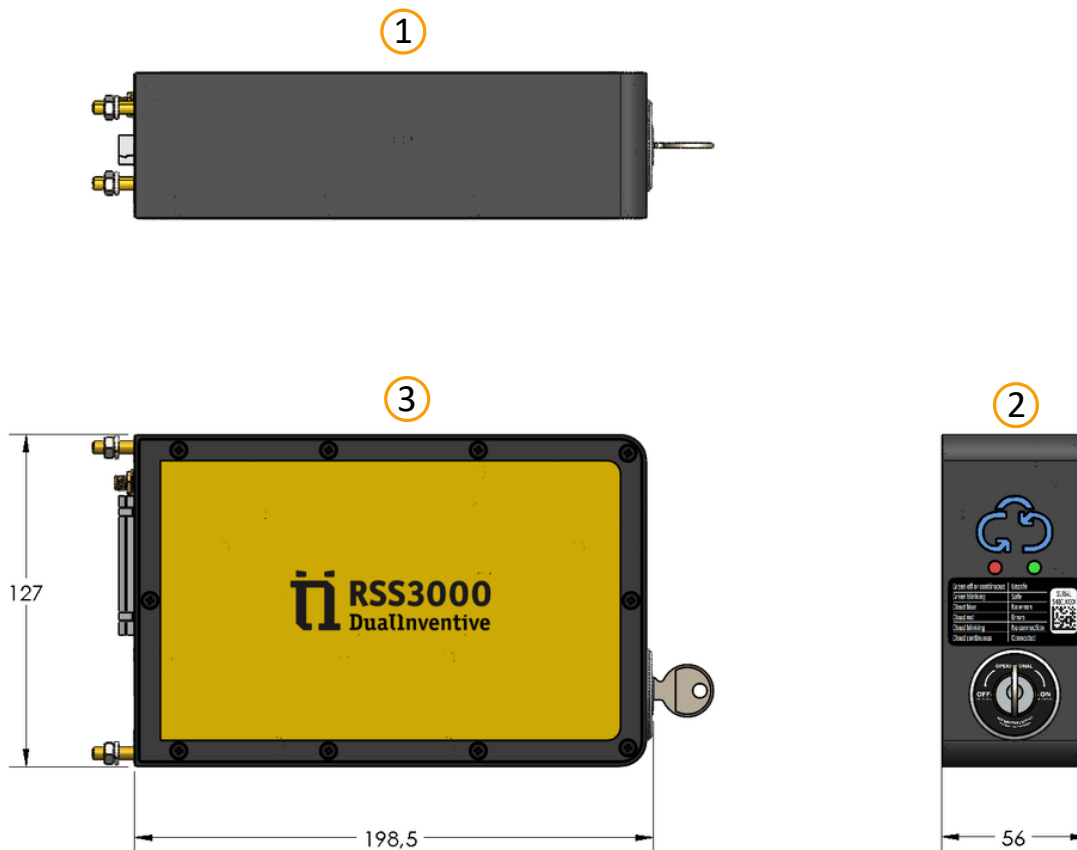


Figure 1 Dimensions and views of RSS 3000

KEY	DESCRIPTION
①	Top View
②	Front View
③	Side View

3.4 Worksite

Always ensure your own safety when entering the railway environment. Follow the applicable local regulations and organizational procedures. Please feel free to define your own labor rules in addition to these regulations and procedures.

4 PRODUCT DESCRIPTION

4.1 Description RSS 3000

The RSS 3000 is intended to activate and deactivate relays, to provide protection to railway track workers by securing railway signaling equipment to a safe state providing a safe area for track workers to undertake railway works

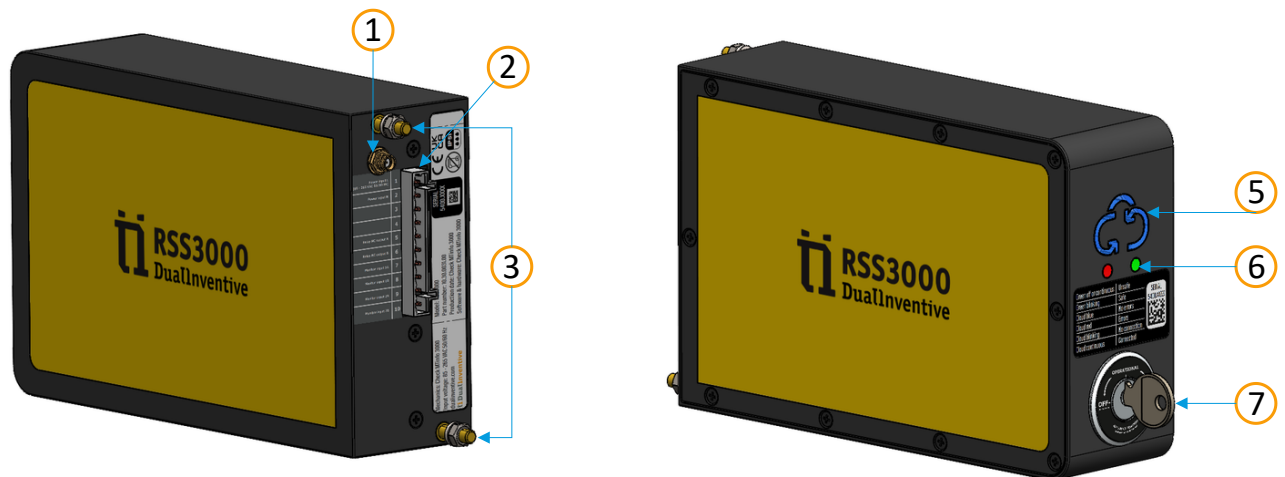


Figure 2 RSS 3000

KEY	DESCRIPTION
①	Antenna connector
②	Relay connector
③	Installation bolts
④	Key switch
⑤	Cloud Light
⑥	Switch status indicator

The RSS 3000 can be connected to one relay within a relay cabinet, allowing it to switch the connected relay on or off.

The RSS 3000 comes equipped with an antenna to ensure a proper 4G telecommunications connection is made.

The CloudLight on the RSS 3000 displays several states of the RSS 3000, such as its connectivity (online or offline) and error state.

The green LED on the RSS 3000 indicates whether it has switched the railway interlocking.. When this LED starts blinking green, the railway interlocking it is connected to has been correctly switched .

The (de)activation of the RSS 3000, named switching, is done remotely or by local control. Because the RSS 3000 can be controlled remotely, users do not need to visit the installation location to manually deploy the safety control measures for their site of work. This increases the safety of track workers, saves time, and reduces the emission of carbon dioxide.

4.2 Transport case and accessories

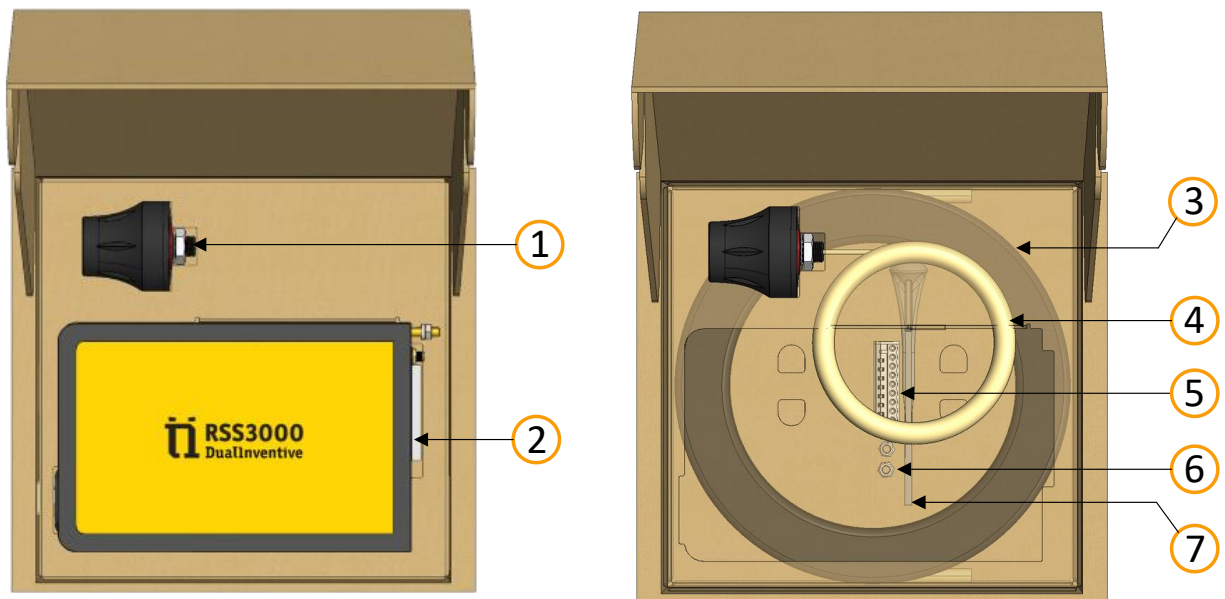


Figure 3 Transport box layout

KEY	DESCRIPTION
①	Antenna
②	RSS 3000
③	Antenna extension cable; Available in 2m or 5m (depends on relay room size)
④	Antenna
⑤	Relay connector with 2 uniform keys
⑥	M5 nuts
⑦	Wire insertion tool

The RSS 3000 and its accessories are delivered in a recyclable box.

4.3 Identification

The type plate is located on the backside.



Figure 4-1: Identification

4.4 MTinfo web and app

The RSS 3000 is used in combination with Dual Inventive’s cloud based control system MTinfo 3000 web interface and the MTinfo 3000 app. You can manage and see the real-time status of the RSS 3000 with these two software applications. For the product descriptions, see:

- User manual MTinfo 3000 web;
- User manual MTinfo 3000 app.

To use the functionality of the RSS 3000, a stable connection with a 2G or 4G telecommunications network is needed. In areas with poor 2G or 4G connection, the RSS 3000 may lose its connection with MTinfo 3000. This means that the RSS 3000 can temporarily not be switched remotely. In the event that telecommunications connectivity is lost the RSS 3000 will maintain it’s switched state, ensuring track worker protection is maintained.

4.5 Work scenarios

The RSS 3000 is used for long term installation in a relay cabinet and is used to switch signals and other railway signaling assets whenever a work zone needs to be secured. This can be used for both short-term and long-term work.

4.6 Terms of use

For safe use of the RSS 3000, the following conditions are applicable:

1. Do not use the RSS 3000 if it has been damaged or shows defects. The RSS 3000 should not have major damage; a slight scratch is acceptable. Quarantine the RSS 3000. Please contact Dual Inventive.



WARNING

The user is not allowed to repair the RSS 3000 and its accessories.

Only install the RSS 3000 in relay cabinets that match its input & output voltage requirements. See chapter 2.5.1 Technical specifications.Environment

The RSS 3000 can be used within a temperature range from -20 to 60 °C whilst inside a relay cabinet. The RSS 3000 is not water- or dustproof and should therefore be protected from rain, sand or other particles that may damage it.

5 SAFETY

5.1 General

5.2 General safety instructions

Specific safety instructions are part of the installation, preparation and switching of the RSS 3000, which are described in these sections. In addition, follow these general safety instructions:

1. Installation of an RSS 3000 must be undertaken to a design created and approved in accordance with the signal interlocking design, installation, testing and commissioning processes of the relevant railway infrastructure controller.
2. Guarantee safety while installing the RSS 3000. Installing the RSS 3000 is a job in itself. Installation should only be undertaken by those deemed competent by the relevant infrastructure controller. The user is responsible for safe installation. Follow the local, national, and organizational regulations and procedures.
3. Check whether the RSS 3000 has the correct certification. Consult www.dualinventive.com for the needed certificates.
4. Distribute the keys of the RSS 3000 only among certified persons. Organize good key management. RSS 3000 manual override keys must be controlled in accordance with the instructions of the railway infrastructure controller.



WARNING

The user is responsible for safe installation.

5.3 Residual risks

Dual Inventive has performed a risk assessment of the RSS 3000 for the intended use and normal operating conditions. The following acceptable, residual risks are present with the intended use and the normal operating conditions:

HAZARD	RESIDUAL RISK
Magnetic field	The RSS 3000 can generate a small magnetic field when in use.

Table 5-1: Residual risks

5.4 Personal Protective Equipment (PPE)

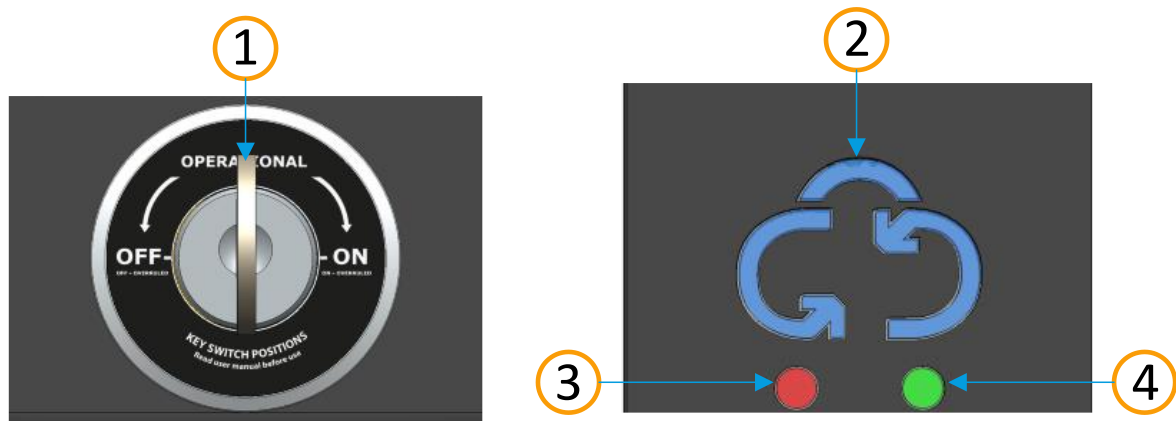
Due to the standard safety measures and PPE for track workers, there is no need for extra PPE while using the RSS 3000.

5.5 Switching on/off and indication lights

For a safe and correct use, the RSS 3000 has:

- a key switch;
- a cloud light;

- a green LED



Figur 4 Control panel RSS 3000

KEY	DESCRIPTION
①	Key Switch
②	Cloud light
③	Red LED
④	Green LED

5.5.1 Key switch

Use the key switch for the positions: ON, OFF and OPERATIONAL. The function and use of these positions are explained in section 7 and 9.

5.5.2 Cloud light

The cloud light shows the status of the RSS 3000 while it is operating. The cloud light has the following indications:

INDICATION	STATE
Blue (Constantly lit)	Online and is working properly.
Red (Constantly lit)	Online and has an error/a low battery.
Fade-in-fade-out (blue or red) ; 1Hz	Offline

Table 5-2: Indications cloud light

When the RSS 3000 does not come online within a reasonable timespan (5-10 min.), use the key as explained in Section [6.3 Functional Test](#). If the RSS 3000 has an error, check the

connection to the relay or the warning & error messages, see section 10. Try to resolve.. If the error remains, contact Dual Inventive for support.



DANGER

Do not use the RSS 3000 when it has an error.

6 TRANSPORT AND STORAGE

Follow these instructions for safe transport and storage:

1. Always use the original packaging for transporting the RSS 3000.
2. Carry the box of the RSS 3000 by hand alongside the body.
3. Do not wind the antenna cable too tight to prevent cracks in the cable. Use the space indicated in the original packaging for the cables.
4. Avoid dropping the RSS 3000. The RSS 3000 contains components that can withstand shocks and vibrations, but the device can break down.



NOTE

The device can be installed in the zone B (1-3 meters away from the track)

When you store the RSS 3000 for a longer period before installation, follow these instructions for proper storage:

1. Make sure that the content of the box is complete.
2. Make sure to store the box in cool and dry environment with temperature range of 20°C to 25°C and relative humidity between 40% to 60%.

7 INSTALLATION

7.1 Before installation : inspection



WARNING

Before installation, check the worksite and make sure that everything is safe.

Always install the RSS 3000 with antenna, otherwise the device will not be able to connect to MTinfo.

Before installing the RSS 3000, follow these instructions:

1. Check the RSS 3000 and accessories visually for damage and flaws. If those are present, do not use the RSS 3000 or accessories.
2. Start the installation of the RSS 3000 with the key in the OFF position.

7.2 Installing the RSS 3000



NOTE

The situation in which you install the RSS 3000 may differ from what is described in the manual.

7.2.1 Mounting the RSS 3000

Mounting the RSS 3000 into the relay cabinet is done as follows:

- **Attach RSSS 3000 to the frame:** The mechanics of the RSS 3000 are equal to the regular relay and can be attached to the frame using the 2x M5x8mm bolts and nuts (included in the box).
- **Connect the antenna extension cable:** to the back of the RSS 3000.
- **Install the antenna head outside the relay cabin:** Use the extension cable if needed by installing the extension cable on the RSS 3000 and installing the antenna cable onto the extension cable.

7.2.2 Installing the relay cables into the RSS 3000

Once the RSS 3000 has been mounted in the relay cabinet and the antenna has been installed, the relay cables can be connected to the RSS 3000 through the connector plug which is included in the box.

The cables are installed by placing the wire insertion tool into the right side of a socket and pulling it to the right side. This will open the left socket, allowing you to put the cable into it. Upon removing the wire insertion tool, the left socket will close, locking the cable in place. Do this for all the 8 wires.

PIN NR.	FUNCTION
1.	Power input L (85-265VAC 50/60Hz)
2.	Power input N (85-265VAC 50/60Hz)
3.	-
4.	-
5.	Relay NC output contact A
6.	Relay NC output contact B
7.	Monitor NO 1 contact A
8.	Monitor NO 1 contact B
9.	Monitor NO 2 contact A
10.	Monitor NO 2 contact B

Test the connection of the RSS 3000 by turning it on and verifying whether the CloudLight shows a constant blue LED. If this is not the case, and the Cloudlight is constantly blinking, it may have a poor connection. If the connection is not ok, check if the antenna cable is connected properly or place the antenna head in a different location for better reception.



WARNING

Installing the wires wrong will result in failure of the system or might even cause damage to the system.

7.3 Functional test



WARNING

The following Functional Test is purely to test the correct function of the RSS 3000. It is not designed to test the correct switching and status of the railway signal interlocking to which it is connected. Testing of the correct switching and status of the railway signal interlocking must be done in accordance with the railway infrastructure controllers installation, testing and commissioning processes

Perform the functional test with the installed RSS 3000 to verify that the device is working as intended. During the test, check the status of the RSS 3000 in MTinfo 3000.

After the functional test, switch the key to the operational position to enable remote switching.

- OPERATIONAL: for remote switching;
- ON: to switch the device ON, no remote switching is possible;
- OFF: to switch the device OFF, **no remote switching is possible.**

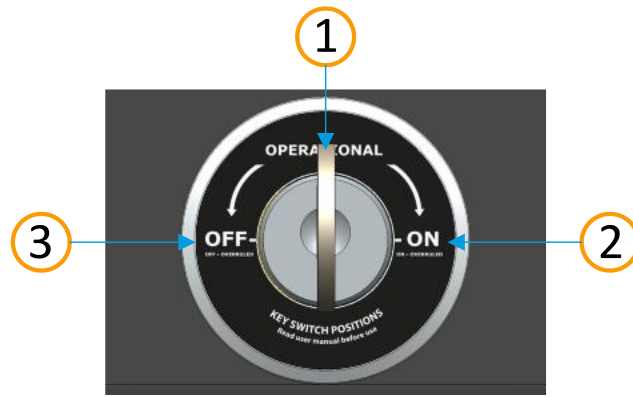


Figure 2 Key Positions

KEY	DESCRIPTION
①	Operational
②	ON
③	OFF

8 SETUP MTINFO 3000

After installation and the functional test of the RSS 3000, it must be activated in the Dual Inventive Cloud based control system MTinfo 3000. The setup in MTinfo 3000 for the RSS 3000 is similar to that of other Dual Inventive devices such as the ZKL 3000 RC and RDI 3000. It allows users who have experience with setting up a project for the ZKL 3000 RC, to create a project with one or more RSS 3000s.

It is also possible to combine more RSS 3000's, ZKL 3000 RC's and RDI 3000s in the same protection zone and to activate or deactivate them simultaneously. This allows practical use of the RSS 3000 for different scenarios. Some examples are:

- projects with only RSS 3000s, containing one or multiple protection zones;
- combined projects with RSS 3000s ZKL 3000 RCs and RDI 3000.

The RSS 3000, ZKL 3000 RC and RDI 3000 can be switched by the same project. Depending on the design and arrangement of the protection zones, the RSS 3000, ZKL 3000 RC and RDI 3000 can be switched simultaneously or separately.

NOTE



For the setup of the RSS 3000 in MTinfo 3000 and the use conditions of MTinfo 3000, refer to the User manual MTinfo 3000 web.

You can download this manual from www.dualinventive.com/en/downloads/

NOTE



The RSS 3000 can be used in combination with a number of other Dual Inventive products.

Please check that the products you wish to use are approved for use by the relevant railway infrastructure controller from <https://dualinventive.com/en/products/>

9 OPERATIONS: SWITCHING

9.1 Introduction

After the installation of the RSS 3000 and the setup of MTinfo 3000, you can switch the RSS 3000 in accordance with the rules of the railway infrastructure controller:

- manually with the key;
- remotely with MTinfo 3000 or the app.

Before switching, please pay attention to the following:

- To protect against loss of signal to MTinfo 3000, the RSS 3000 can be switched to manual control with the key. Make sure the key to switch is always available on the project; without the key, phone/app or computer connection, the RSS 3000 cannot be switched.



WARNING

BEFORE ANY SWITCHING MAKE SURE YOU HAVE PERMISSION OF THE RAILWAY SIGNALLING CONTROLLER/SIGNALER/DESPATCHER

9.2 Manual switching

9.2.1 Activation

Insert the key into the key switch and switch to the ON position.

The real-time status in MTinfo 3000 will display:

- Device status: Online (blue);
- Switch status: Switched ON (green);
- Key position: On;
- Detection: OK

9.2.2 Deactivation

Switch the key to the OFF position.

The real-time status in MTinfo 3000 will display:

- device status: Online (blue);
- switch status: Switched OFF (red);
- key position: Off;
- Detection: NOK.

9.3 Remote switching

For remote switching, switch the key to the OPERATIONAL position.



NOTE

For instructions on remote switching of the RSS 3000 using the MTinfo 3000 web page, refer to the User manual MTinfo 3000 web.

You can download this manual from www.dualinventive.com/en/downloads/



NOTE

For instructions on remote switching the RSS 3000 in the MTinfo 3000 SMART phone application, refer to the User manual MTinfo 3000 app.

You can download this manual from www.dualinventive.com/en/downloads/

10 TROUBLESHOOTING

10.1 Introduction

The RSS 3000 sends SMS & email notifications (MTinfo 3000 and app) to inform or warn the user. The user needs to act on the received message to resolve a potential problem to ensure that the RSS 3000 is functioning correctly.

The RSS 3000 is equipped with an SD card to store data from the device. The SD card is not accessible to the user and can only be read by Dual Inventive. The user can access data of the RSS 3000 using MTinfo 3000. The SD card is not a safety-critical element. The SD card is only used as a back-up when data needs to be retrieved that, for some reason, is not visible in MTinfo 3000.



NOTE

If you frequently receive warning and error messages, contact Dual Inventive.

10.2 General problems

For general problems with the connectivity or MTinfo 3000, refer to the table below:

CONTEXT/CAUSE	SOLUTION
One or more devices in a project are offline.	<p>The device could be defective. Check the device and perform a functional test.</p> <p>The connection with the power supply could be defective. Check the cables of the RSS 3000 and the power supply.</p> <p>Alternatively, check the antenna. In case of unavailability add a new one.</p>
When starting, it is not possible to release the project.	The project design or project planning steps are not completed or one of the devices is not in the correct state. Please check the project and devices according to the feedback.
The app indicates that the project has not been released yet.	The app shows the person that needs to be contacted to release the project.
The person who is authorized to release the project is ill or cannot be reached.	<p>Make sure that the keys of the RSS 3000 are always available on site.</p> <p>Please contact the work planner and assess whether the RSS 3000 can be switched manually.</p>

Table 10-1: General problems

10.3 Errors, Alerts and Warnings

Users with switching rights on a released project will automatically receive alerts via text messages (SMS or Email). The Users' mobile phone number is entered as the alarm contact number within the user profile to enable this. The notification service starts as soon as the RSS 3000 has been assigned to a project and the project is released. The recipient is responsible for acting on these alerts.

The text message alerts that require action are:

ALERT	EXPLANATION	ACTION
RSS 3000 "Serial Number" Detection NOT ok. Please check manual for more information	RSS 3000 switch status is unknown or cannot be guaranteed The detection is not OK.	Check the device connector and cable to the Relay and replace if damaged. If this does not solve the issue replace the device with another device and return it for service.
RSS 3000 "Serial Number" is offline. Please check manual for more information	RSS 3000 with ID "Serial Number" is offline. The RSS 3000 cannot make a connection to MTinfo 3000.	Check the power source of the RSS 3000 or check the Dual Inventive Status page web page for network telecommunications outage. If this does not solve the issue, contact Dual Inventive.

Table 10-2: Warning and error messages

ERROR CODE	ERROR MESSAGE	EXPLANATION
7	`DNE_PROTO`	Deserialising data failed
12	`DNE_OPDENIED`	Operation not allowed
1027	`DNE_FIRMWARE_EEPROM`	A memory error has occurred
1038	`DNE_FIRMWARE_SWITCH_COMM`	Can not communicate with the switch
1062	`DNE_FIRMWARE_KEYSWITCH_NOT_OPERATIONAL`	Keyswitch state is not operational
1063	`DNE_FIRMWARE_DEVICE_CONTAINS_ERRORS`	Device contains errors
1064	`DNE_FIRMWARE_DEVICE_SERVICE`	Not allowed in service state

1065	`DNE_FIRMWARE_DEVICE_ARMED`	Not allowed in armed state
1066	`DNE_FIRMWARE_DEVICE_ACTIVE`	Not allowed in active state
1067	`DNE_FIRMWARE_DEVICE_IDLE`	Not allowed in idle state
1069	`DNE_FIRMWARE_MISMATCH_TOKEN`	Token does not match previous token
1070	`DNE_FIRMWARE_RELEASE_SWITCH_COMM`	Could not communicate with the switch during release
1071	`DNE_FIRMWARE_ACTIVATE_SWITCH_COMM`	Could not communicate with the switch during activate
1072	`DNE_FIRMWARE_DEACTIVATE_SWITCH_COMM`	Could not communicate with the switch during deactivate
1073	`DNE_FIRMWARE_ACTIVATE_SHORT_NOT_ENABLED`	Failed to activate the RSS
1074	`DNE_FIRMWARE_DEACTIVATE_SHORT_ENABLED`	Failed to deactivate the RSS
1087	`DNE_FIRMWARE_DNCM_FAIL`	No dncms found
1129	`DNE_FIRMWARE_INTERLOCKING_MISMATCH`	Interlocking mismatch

Table 9-3: Possible Errors

WARNING CODE	WARNING MESSAGE	EXPLANATION
2001040	`DNE_WRN_FIRMWARE_DETECTION_NOK`	Detection is not ok
2001042	`DNE_WRN_FIRMWARE_DNCM_MISMATCH`	Expected dncms mismatch
2001058	`DNE_WRN_FIRMWARE_SECTION_BROKEN`	A switch section is broken
2001059	`DNE_WRN_FIRMWARE_SELFTEST_SKIPPED`	Self test skipped because not all sections where open
2001061	`DNE_WRN_FIRMWARE_DNCM1_SD_CARD_ERROR`	The sd card have an error (DNCM1)

2001062	`DNE_WRN_FIRMWARE_DNCM1_SD_CARD_NOT_PRESENT`	The sd card is not present (DNCM1)
2001063	`DNE_WRN_FIRMWARE_DNCM1_SD_CARD_ALMOST_FULL`	The sd card is almost full (DNCM1)
2001072	`DNE_WRN_FIRMWARE_ACTIVATE_SWITCH_COMM`	Could not communicate with the switch during activate
2001074	`DNE_WRN_FIRMWARE_DNCM1_SD_CARD_OVERFLOW`	SD card overflow (DNCM1)
2001077	`DNE_WRN_FIRMWARE_DNCM1_SD_CARD_DATA_MISSED`	SD card data missed (DNCM1)

Table 9-4: Possible Warnings

10.4 Errors and Alerts – Reminders

For offline and critical events, a reminder system is introduced. The reminders help the user to remember that there is an unresolved issue with a specific RSS 3000

NOTE



In the event of persistent error messages requiring examination of, or manual switching of the relevant RSS 3000 please escalate to the the railway infrastructure controllers fault control centre so that appropriately competent technicians with authority to access the RSS 3000 location can investigate.

A reminder is sent after a 15-minute interval. A maximum of 3 reminders are sent for one continuously 'not ok'-situation. Reminders are only sent when the device is in an active state (i.e., in an activated protection zone).

The reminder text messages are:

ALERT	EXPLANATION	ACTION
Reminder: RSS 3000 "Serial Number" Detection NOT ok. Please check manual for more information	Reminder message when the monitoring is not ok, and the device is in an activated protection zone	Check the device connector and cable to the Relay and replace if damaged. If this does not solve the issue replace the device with another device and return it for service.

ALERT	EXPLANATION	ACTION
Reminder: RSS 3000 "Serial Number" is offline. Please check manual for more information	Reminder message when the device is offline, and the device is in an activated protection zone.	Check the power source of the RSS 3000 or check the Status page for network outage. If this does not solve the issue, contact Dual Inventive.

Table 10-3: Warning and error reminders

11 MAINTENANCE

11.1 Periodic maintenance

The RSS 3000 is designed to operate within a relay cabinet, which is designed to withstand an environment where it is exposed to all kinds of weather, shocks, vibrations, and electromagnetic signals. As such, the RSS 3000 is not intended to be used outside of these protected cabinets and does not require periodic maintenance.

11.2 Accessories

Dual Inventive provides the following accessories for the RSS 3000:

- Antenna cable
- Extension cable antenna
- M5 wrench, including extra set nuts & washers (4 each)
- Wire insertion tool

Please contact the Dual Inventive sales department for ordering and information about accessories.

12 ABBREVIATIONS

ABBREVIATION	EXPANSION
NC	Normally Closed
RSS 3000	Remote Safety Switch 3000
PPE	Personal Protective Equipment

13 LIFESPAN

The RSS 3000 does not need to be serviced periodically by Dual Inventive. It has a lifespan of 10 years.

13.1 Warranty and delivery conditions

Dual Inventive's products are carefully manufactured from high-quality materials. The RSS 3000 is supported by a service contract that contains the:

- general delivery conditions;
- warranty conditions;

14 DISPOSAL

The RSS 3000 contains harmful substances which must never be disposed into the environment. Dispose the RSS 3000 correctly so that the materials can be recycled.



CAUTION

The owner of the RSS 3000 is responsible for proper disposal.

Dual Inventive offers a service for responsible collection and recycling of the RSS 3000. Please contact Dual Inventive for this service.

If no take-back agreement has been made, consult local authorities and specialized disposal companies. They will provide information about environmentally responsible waste processing.