

Schlegel Control System for RFID

Operating instructions SKS version TRA



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Safety regulations!

This operating instruction must be provided to the person who installs the SKS (Schlegel Control System). Please read it carefully and keep it for future reference.

Intended use!

Typical use in the machine building industry; vehicle construction; building, installation and surveillance technology; plant and control engineering; leisure facilities for application with the designated voltages and currents in the specified frequency and temperature range (see data sheet, operating instruction, catalogue) in the industrial environment.



1 Overview

General RFID basics

RFID can be used in many ways in order to map new or existing processes more effectively and more efficiently. This can be e.g. the simple login/logout on a machine or the mapping of functionality of a mode switch. Here the RFID transponder quasi serves as a key being identified and read via the RFID reader and enabling the assigned functions via the related control.

RFID offers the following advantages:

- Each transponder has a unique serial number (UID, unique identification) which guarantees a unique assignability and thus allows the realisation of an authorisation system.
- Beside reading of the UID the data on the transponder can also be changed, deleted or supplemented so that a flexible data management can be realised.
- The contactless communication is fast, reliable and wear-free.
- The technology is insensitive to environmental influences and very robust.

1.1 Components

These operating instructions refer to the SKS bundle type SKS_RRJ(XX)_TRA. The bundle includes the following components which also can be ordered separately:

- 1 SKS control RFID_SKS_TRA
- 1 SKS reader RRJ(XX)_RFID_SKS01 (standard: silver-coloured, XX: SW = black)
- 1 master key (transponder, red) ESRTM
- 5 user keys (transponder, black) ESRTU_S



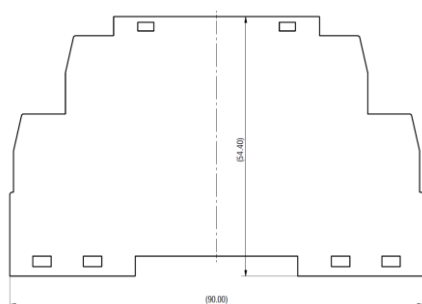
1.2 Product characteristics

The product characteristics for SKS are:

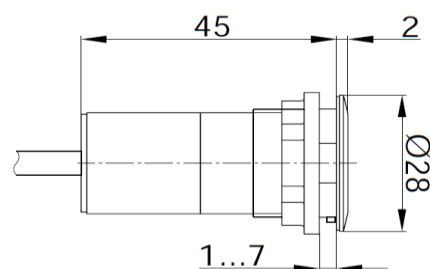
- Integrated control: No control on customer's site (PLC, industrial PC) is required.
- Quick and easy to install: No expert or programming knowledge is necessary.
- Mapping of the access authorisation via 3 potential-free relay outputs: This allows to realise 7 authorisation levels.
- Authentication and authorisations for up to 25 transponders: The assignment of the transponders to the relay outputs is done via an integrated table.
- Simple and fast teach-in of the transponders via a master/user key system: No data is stored on the transponders!
- LED status indication: Optional LED illuminated ring and tag holder.
- 2 different operating modes (momentary / maintained).
- Panel cut-out \varnothing 22.3mm (\varnothing 30.5mm with LED ring/tag holder)
- Degree of protection IP65 / IP69K (SKS reading device); IP20 (SKS control)

1.3 Product dimensions

SKS control



SKS reader



2 Functional description

For operating the SKS no control on customer's site (PLC, industrial PC) is required, thus the system can be set up easily and quickly. No expert or programming knowledge is necessary for the start-up. The SKS control has 3 potential-free relay outputs which can be used individually or in combination. This allows 7 different authorisation levels which can be allocated to up to 25 transponders. For the allocation of the transponders to the relay outputs the control includes an integrated table with different combinations. Depending on the required allocation the suitable programme can be set via the selector switch on the face of the control. The system has two different operating modes:

Cyclic reading (momentary): The SKS reading device checks the status of the transponders automatically at regular intervals. As long as a transponder is registered, the relating access rights are active. If a transponder is no longer registered, the access rights will be deactivated. Both states are permanently signaled by the corresponding illumination. This behaviour corresponds to a momentary function.

Single reading (maintained): The SKS reading device automatically checks the status of the transponder once. Only when the transponder is being removed and placed again, it will be registered again by the SKS reading device. The new status will be signaled by changing the illumination for a short time. This behaviour corresponds to a maintained function.

2.1 Additional functions

Improved status indication

With the optional LED illuminated ring LR22K5DUO_GB_619 the actual status is being indicated, even if there is a transponder on the SKS reader.

Tag holder

The RFID tag holder RRJ_RFID_HR_LBG is particularly helpful when using the cyclic mode. By latching the transponder into the holder, it remains permanently connected to the SKS reader. In addition, the tag holder is also illuminated with an LED illuminated ring.



3 Assembly and configuration

NOTE!

Risk of damage to components due to electrostatic discharge!

In order to prevent damage to components, please ensure electrostatic discharge by touching a grounded, conductive surface or by wearing a grounded wristband during all assembly operations.

Do not apply power until you have completed the installation and configuration of the SKS control (see start-up).

3.1 Installation

1. Fix the SKS control RFID_SKS_TRA to a suitable DIN rail.
2. Connect the SKS reader RRJ(XX)_RFID_SKS01 to the SKS control.
3. Connect the switching contacts (relay) via the terminal connections K1 to K3.
4. Connect the power supply 24 V DC.

3.2 Configuration

On the face of the SKS control there is a selector switch to select the requested operating mode and the requested assignment of the transponders.

Table 1 shows the various possibilities.

In case no assignment is suitable, a customised table can be created. Please contact the Schlegel support team if this is required.

It is recommended to disconnect the SKS from the mains before changing the configuration (turning the selector switch of the SKS control).



Transponder allocation

Pos	Relay 1	Relay 2	Relay 3	Relay 1.2	Relay 1.3	Relay 2.3	Relay 1,2,3
0	Pairing						
Cyclic mode (momentary function)							
	Allocation of the transponders to the individual relays						
1	1, 7, 13, 19	2, 8, 14, 20	3, 9, 15, 21	4, 10, 16, 22		5, 11, 17, 23	6, 12, 18, 24
2	1, 4, 7, 10, 13, 16, 19, 22			2, 5, 8, 11, 14, 17, 20, 23			3, 6, 9, 12, 15, 18, 21, 24
3	1, 4, 7, 10, 13	2, 5, 8, 11, 14		3, 6, 9, 12, 15			
4	1, 8, 15, 22	2, 9, 16, 23	3, 10, 17, 24	4, 11, 18	5, 12, 19	6, 13, 20	7, 14, 21, 25
5	1, 5, 9, 13, 17	2, 6, 10, 14, 18	3, 7, 11, 15, 19				4, 8, 12, 16, 20
6	1, 2, 3, 4, 5	6, 7, 8, 9, 10	11, 12, 13, 14, 15	16, 17, 18	19, 20, 21	22, 23, 24	25
Single mode (maintained function)							
	Allocation of the transponders to the individual relays						
7	1, 7, 13, 19	2, 8, 14, 20	3, 9, 15, 21	4, 10, 16, 22		5, 11, 17, 23	6, 12, 18, 24
8	1, 4, 7, 10, 13, 16, 19, 22			2, 5, 8, 11, 14, 17, 20, 23			3, 6, 9, 12, 15, 18, 21, 24
9	1, 4, 7, 10, 13	2, 5, 8, 11, 14		3, 6, 9, 12, 15			
A	1, 8, 15, 22	2, 9, 16, 23	3, 10, 17, 24	4, 11, 18	5, 12, 19	6, 13, 20	7, 14, 21, 25
B	1, 5, 9, 13, 17	2, 6, 10, 14, 18	3, 7, 11, 15, 19				4, 8, 12, 16, 20
C	1, 2, 3, 4, 5	6, 7, 8, 9, 10	11, 12, 13, 14, 15	16, 17, 18	19, 20, 21	22, 23, 24	25
D..F	Reserved						

Table 1: Allocation of the transponders to the relay outputs.

Example selector switch in position 2

Cyclic mode

Transponder 1 = switches relay 1

Transponder 2 = switches relay 1 and 2

Transponder 3 = switches relay 1, 2 and 3

Transponder 4 = switches relay 1 ...

The allocation of the transponders always is done in series (serial) from 1 to maximal 25!

NOTE!

By turning the selector switch, the transponders which are already active can get another assignment. In order to prevent this safety risk, the RFID control must not be freely accessible.

4 Start-up

Prior to the first start-up please recheck all components as to:

- correct mounting
- correct cabling

4.1 Preparation

- Switch on the power supply.
- The LED of the SKS control and the LED of the SKS reader light up in green.
- Prepare the red master key and the user keys.

4.2 Teach in of user keys (transponders)

Note!

Before being able to teach in the user keys once again, the Schlegel Control System (SKS) has to be switched off for abt. 5 seconds.

Note!

There is no data storage on the transponders, instead the UID of the transponder is being taught in on the SKS reading device. The SKS reader can store a maximum of 25 UIDs.

Note!

By activating the teach-in mode all transponders registered so far are being cleared, even if the process is being completed without teaching in a new transponder.

1. Place the master key on the SKS reader until the status indication is flashing green.
All previously taught in transponders will be deleted!
Then remove the master key.
2. Place the user keys one by one on the SKS reading device. The sequence is always serial from 1 to 25 max., i.e. each user key is assigned one by one to the relay



outputs belonging to its number and according to the selected table entry (see table 1).

If the transponder has been identified and taught in, the LED is lighting up in blue for a short time.

Then the LED is blinking again in green and is ready for the next transponder.

3. As soon as all user keys are taught in, the teach-in is being completed by placing the master key on the SKS reader once again.
The status indication is blinking for abt. 5 seconds changing from green to blue.
The SKS reader is ready for operation if the LED is blinking again in green.

When the teach-in is completed, the transponders are ready for use. You can now check the function of the relay outputs by placing the transponder to be checked on the SKS reader. If the LED indication is changing to blue and if the correct relay outputs are being opened, the teach-in is successfully completed.

4.3 Pairing of the SKS reader with the SKS control

The position 0 of the selector switch serves to connect the components so that they can communicate with each other. This is necessary if one of the components has to be replaced.

1. Set the system free from tension.
2. Exchange the component and turn the selector switch of the SKS control to position 0.
3. Apply system voltage. After a short time, the LED indication on the face of the SKS control has to light up briefly in blue for two times in order to indicate that the pairing has been successfully completed.
4. Set the system free from tension.
5. Set the selector switch of the RFID control to the position of the requested transponder assignment.
6. Apply system voltage.



4.4 LED indication

LED SKS control	LED SKS reader	Status
green	green	ready for operation
blue	blue	transponder identified
-	cyan (light blue)	- transponder not identified or could not be taught in - wrong master key
-	green blinking	waiting for transponder (teach-in)
-	green/ blue blinking	completion of teach-in

5 Safety

The SKS system is not suitable for safety-related applications. It is not possible to give any indications as to safety categories and performance levels.

6 Technical data

The technical data is available on our website under www.schlegel.biz.

7 Disposal

The proper disposal must be carried out in accordance with the national regulations and laws.

8 Support

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