

# Schlegel Control System for RFID

Operating instructions SKS version TCA



Artikelnummer: 615404120004



## 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 (standard: silver-coloured, XX: SW = black)

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

- 1 SKS plug-in module RFID\_SKS\_TCA
- 1 SKS reader RRJ(XX)\_RFID\_SKS01
- 1 master key (transponder, red) ESRTM
- 5 user keys (transponder, black) ESRTU\_S



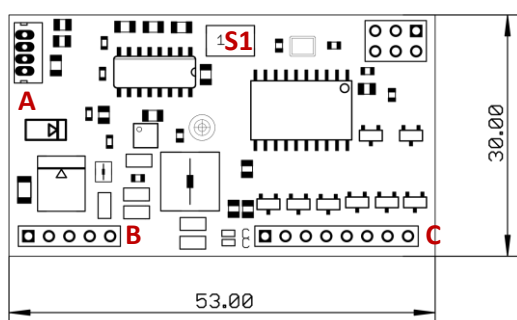
## 1.2 Product characteristics

The product characteristics for SKS are:

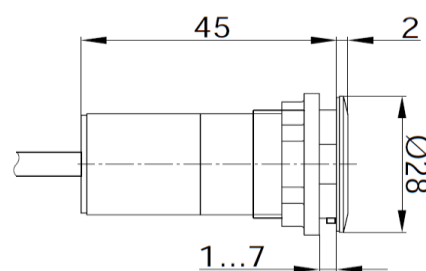
- SKS plug-in module for integration in existing controls or for fieldbus applications.
- Quick and easy to install: No expert or programming knowledge is necessary.
- Mapping of the access authorisation via 5 open collector outputs: The BCD value of the 5 outputs allows to realise up to 25 unique authorisation levels.
- Authentication and authorisations for up to 25 transponders: The transponders are assigned to the open collector outputs serially.
- 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.
- Panel cut-out Ø 22.3mm (Ø 30.5mm with LED ring/tag holder)
- Degree of protection IP65 / IP69K (SKS reading device); IP00 (SKS plug-in module)

## 1.3 Product dimensions (mm)

SKS pluggable module



SKS reader



## 2 Functional description

The SKS plug-in module has 5 open collector outputs which can be managed with a control on customer's site (PLC, industrial PC, fieldbus system). The system is also ideally suited for the integration into Schlegel's modular operating concept\*. The BCD values from 1 to max. 25 are mapped via the 5 open collector outputs and exactly 1 transponder is assigned to each value. Thus, up to 25 different authorisations can be realised with the TCA (transponder collector assignment). The transponders are programmed via a simple master/user key system and programming is always done in series. That means, transponder 1 is assigned to output 1, transponder 2 to output 2, transponder 3 to output 1 and 2, transponder 4 to output 3, transponder 5 to output 1 and 3, etc. (see table 1, section 3 "Assembly and configuration").

\* The modular operating concept of Schlegel allows an easy integration of operating units of the following field bus systems: Profibus, Profinet, CANopen, Ethernet IP, EtherCAT, Powerlink, IO-Link and AS-Interface. The modular operating concept communicates externally via the corresponding bus node, internally the communication is done via a proprietary protocol from Schlegel.

### 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 for drop-shaped transponders or the RFID holder RRJ\_RFID\_KH\_LBG for card-type transponders are particularly helpful when using the cyclic mode. By fixing 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. Plug the SKS plug-in module RFID\_SKS\_TCA onto the corresponding electronics.
2. Connect the SKS reader RRJ(XX)\_RFID\_SKS01 to the SKS plug-in module (A).
3. Connect the customer-own control to the open collector outputs (C).
4. Connect the system connector (B).

### 3.2 Configuration

The SKS plug-in module does not require any configuration and can be used immediately. The configuration of a customer-own control must be carried out beforehand by the customer according to the requirements.

#### Transponder assignment

When teaching in the transponder on the RFID reader they are assigned with a BCD coded value of 01<sub>hex</sub> to 19<sub>hex</sub> in the order in which they are being placed on the reader and taught in. This assignment is then being transmitted to the RFID control if it is within the range. The RFID control transfers the assignment of the transponders to the open collector outputs binary.



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Assignment overview:

User key 1 to 25      BCD coded value from 01<sub>hex</sub> to 19<sub>hex</sub>

Master key              BCD coded transmission value 4D<sub>hex</sub>

Transponder	OC 1	OC 2	OC 3	OC 4	OC 5
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	•			•	•

Table 1: Assignment of the transponders to the open collector outputs.

**The transponders are always assigned in series (serial) from 1 to 25 maximum!**



## 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 plug-in module 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 open



collector outputs belonging to its number according to the assignment table (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 open collector outputs by placing the transponder to be checked on the SKS reader. If the LED indication is changing to blue and if the correct open collector outputs are being switched, the teach-in is successfully completed.

## 4.3 Pairing of the SKS reader with the SKS control

The pairing of the RFID reader with the RFID control is done by the manufacturer prior to the delivery. However, if it is necessary to exchange a component the RFID reader has to be paired again with the RFID control.

1. Set the system free from tension.
2. Exchange the corresponding component.
3. Keep the button **S1** of the SKS plug-in module pushed and apply the system voltage. After a short time, the LED indication 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.





## 4.4 LED indication

LED SKS plug-in module	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](http://www.schlegel.biz).

## 7 Disposal

The proper disposal is to be carried out according to the national regulations and laws.

## 8 Support

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