SmartRelay:
SREL, SREL.ZK, SREL.ADV

Published: December 2006

Simons Voss technologies

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1.0 Important Information

Safety remark:
Caution! – Incorrect handling of the batteries and storage batteries used in this product can result in the risk of fire or burns. Do not charge, open or burn these batteries or heat them to more than 100 °C (212 °F).

Installation of a SimonsVoss SmartRelay requires knowledge in the areas of door mechanics, door certifications, installation of electronics and the use of the SimonsVoss software. For this reason, only trained and authorized personnel should install the unit.

Compliance Statement (Part 15.19)
This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Warning (Part 15.21)
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Interference Statement (Part 15.105 (b))
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada Statement per Section 4.0 of RSP-100
The term "**IC:**" before the certification / registration number only signifies that the Industry Canada technical specifications were met.

Section 7.1.5 of RSS-GEN
Operation is subject to the following two conditions:
1) this device may not cause harmful interference, and
2) this device must accept any interference received, including interference that may cause undesired operation.

SimonsVoss Technologies Inc. will not accept any liability for damages caused by incorrect installation.

Incorrectly installed SmartRelays may block the access through a door. SimonsVoss Inc. is not liable for the consequences of incorrect installation, such as blocked access to injured or endangered persons, property damage or other damages.

If you will be storing the SmartRelay for more than one week, remove the backup battery.

The SmartRelay must be installed in compliance with ESD (electrostatic discharge) guidelines. In particular, contact with the printed circuit boards and the switching circuits integrated on them must be avoided.

2.0 Product Description

The SimonsVoss SmartRelay is an electronic switch that you can activate or deactivate with a SimonsVoss transponder. You can use the SimonsVoss software to configure the authorization for transponders that are permitted to operate the SmartRelay. As a result, the SmartRelay offers the full function of an access control reader.

3.0 Before Ordering

3.1 Determine Which Version of the SmartRelay you need

1. SmartRelay basic version: ordering code SREL

   This relay allows simple yes/no authorization for up to 8184 different transponders.

2. SmartRelay Plus version with access logging and time zones: ordering code SREL.ZK.

   Like the basic version, but with the capability of separately switching on access logging for the last 1024 accesses (for firmware version 4.0.01.15 and later), with date and time, or day-time zones for up to five groups of people, and automatic locking and unlocking.

3. SmartRelay Advanced version, ordering code SREL.ADV

   Like the Plus version, but with the following additional functions:
   - Connection for external modules using a three-wire bus
   - Connection of an extended antenna
   - Connections for serial interfaces to external time recording terminals or access control readers
   - Connection for external LED or buzzer

3.2 Determine Which Accessories you need

Extended antenna for unfavorable reception conditions ordering code: SREL.AV

Battery only for SREL, SREL.ZK and SREL.ADV in case you will be operating these products without an additional supply voltage: ordering code SREL.BAT

3.3 Dimension and Procure Power Supplies

These power supplies are necessary for all SmartRelays that will not be battery operated. The power supply should have an output of no more than 15 watts and should be capable of delivering voltage of 12 VAC or 5 to 24 VDC when the current is 100 mA.

Attention! Do not user any switched-mode power supplies near the SmartRelays.

3.4 Determine the Installation Position

The range from the transponder to the SmartRelay (reader range) is a maximum of 1.5 m (5 feet), but can be dampened by a metal environment (particularly by strong magnetic fields or aluminum).

Ideally, you should conduct a range test with an authorized transponder and a battery-operated SmartRelay.

3.5 Additional Information:

- All cables for connecting to the SmartRelay should be type IY(ST)Y ....x0.6 (Twisted-Pair shielded cable). The maximum cable length should not exceed 330 ft. (100 m). At the same time, you must take into account the power losses when you specify the supply voltage.

- You must take into consideration the technical specifications for the inputs and outputs (see Technical Data)

- All wiring is to be installed per NEC guidelines.

4.0 Before Installation

- Unpack the SmartRelay and check for any damages.

- Connect the SmartRelay to a supply voltage or battery.

- If you are operating the SmartRelay with a power supply, insert the backup battery included in the delivery into the holder provided for it (see Installation of the Backup Battery).

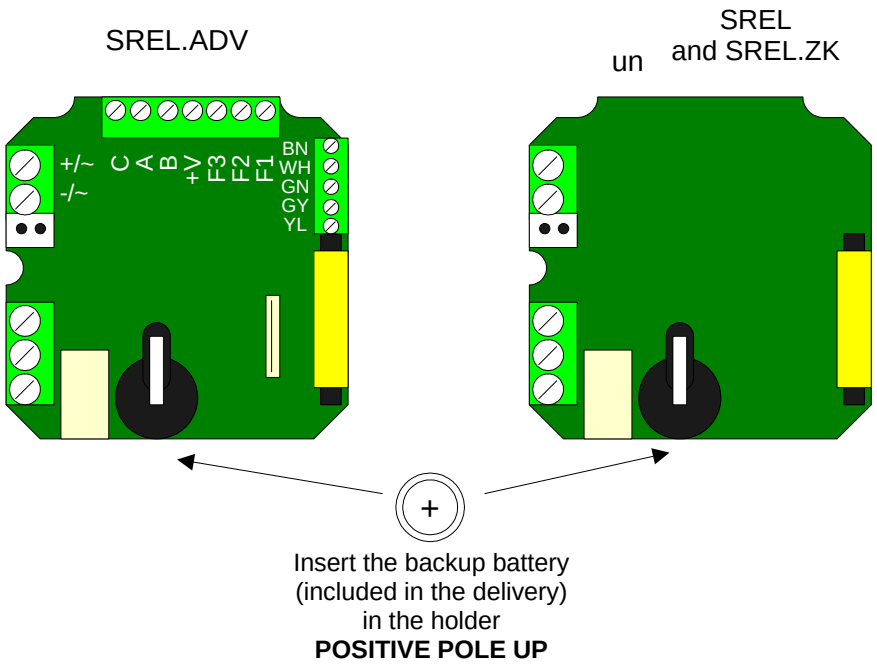
- Verify the function of the SmartRelay with a transponder in the condition as received from the factory.

- If you are installing the SmartRelay in a flush socket device, remove the housing.

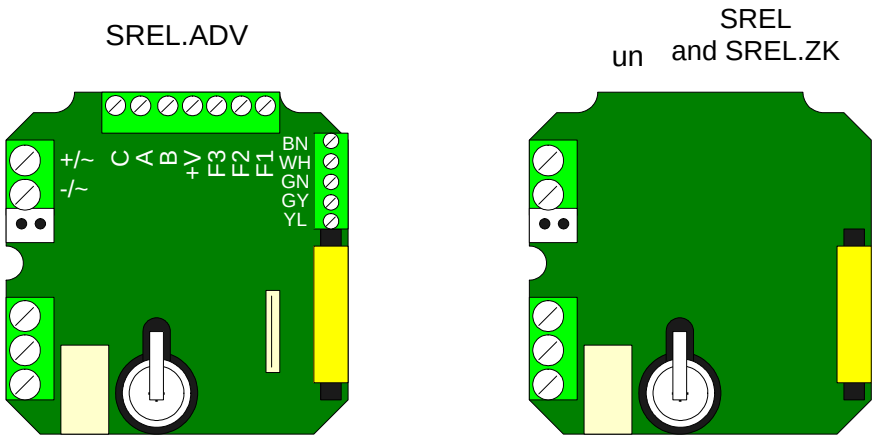
- If you are installing the SmartRelay on the wall, you can use the bottom plate as a template for drilling.

4.1 Installation of the Backup battery

Insert the battery only if you will be operating the SmartRelay with the power supply. Do not insert this battery if you will be operating with the SREL.BAT!



Insert the backup battery
(included in the delivery)
in the holder
POSITIVE POLE UP



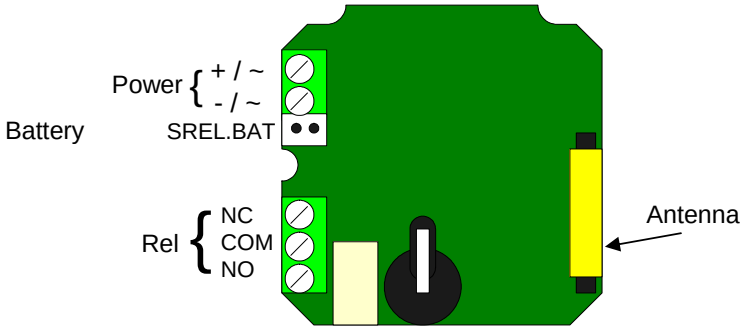
5.0 Installation

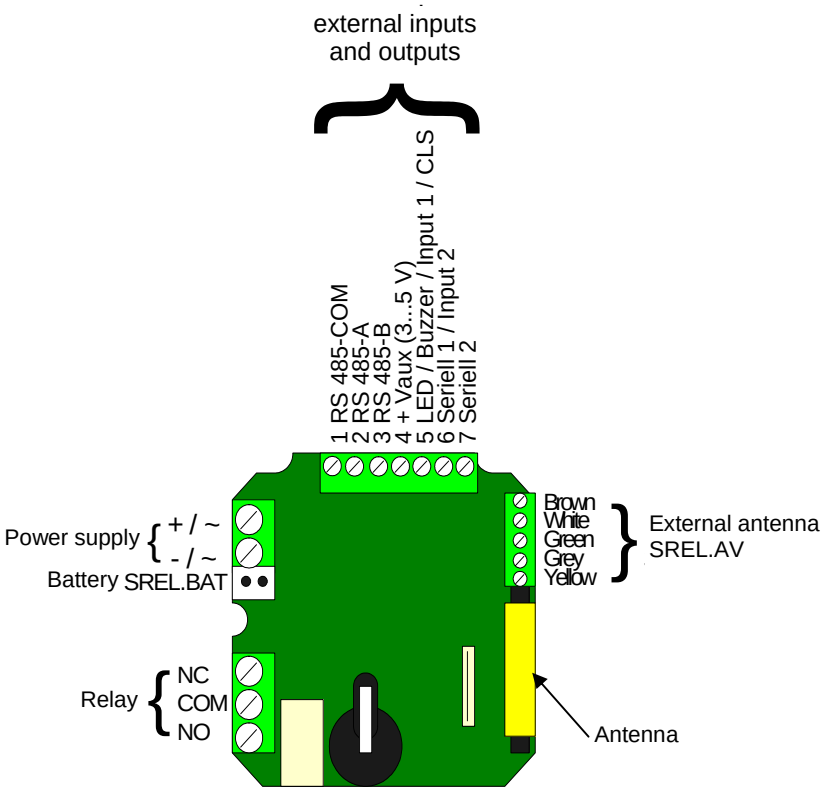
- Switch off the supply voltage (if necessary, pull out the plug or disconnect the battery).
- Connect all cables to the terminals provided on the SmartRelay (see Connection Assignments on the following page)

  If you are connecting a direct current power supply, make sure that you get the polarity correct.
- Switch on the supply voltage (if necessary, insert the plug or connect the battery).
- Verify the function of the SmartRelay with a transponder in the condition as received from the factory.
- Program the SmartRelay with the SimonsVoss software (we recommend software version LDB.EXE 1.40 or later).
- Use a transponder that is now authorized in order to test the functioning of the SmartRelay again.

6.0 Connection Assignments

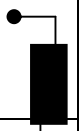
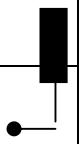
6.1 SREL and SREL.ZK





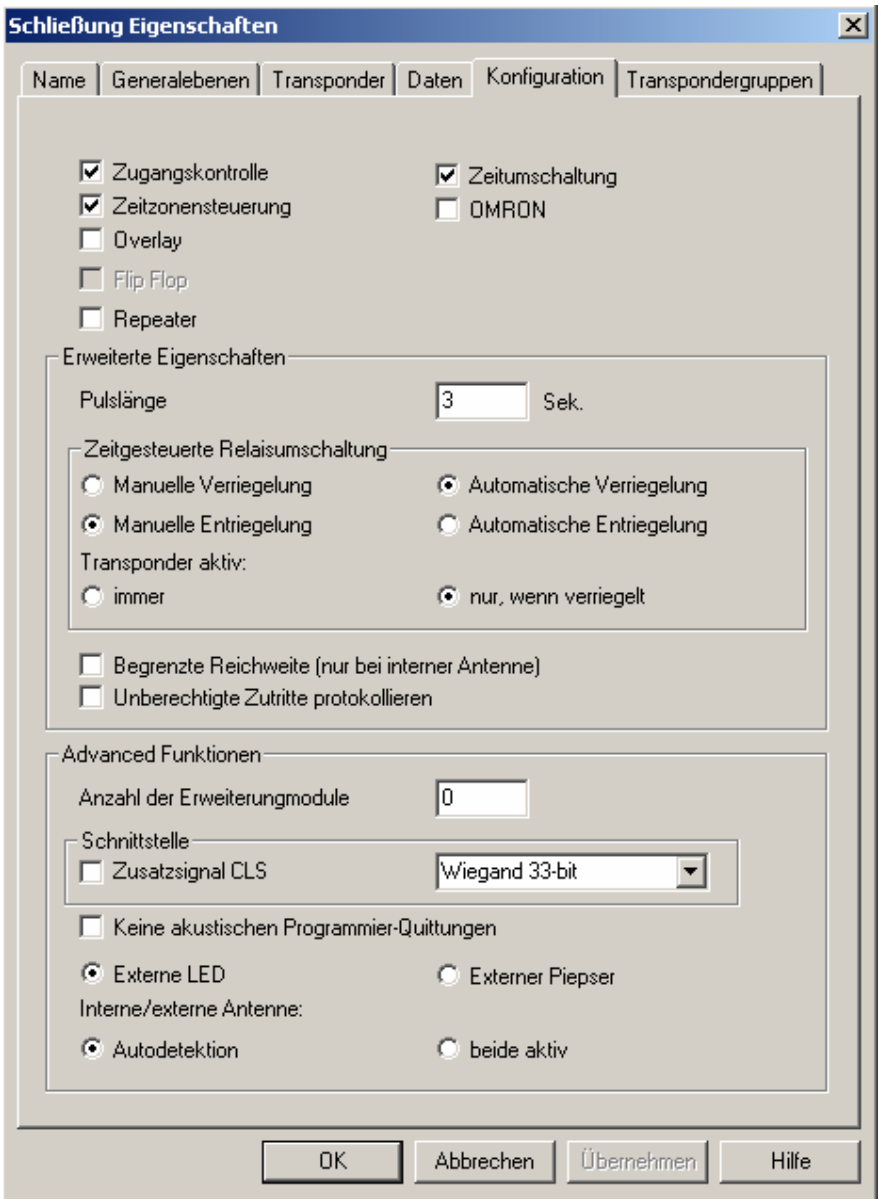
6.2 SREL.ADV

6.3 Description of the SREL, SREL.ZK and SREL.ADV Connection

Name	Symbol	Description
Power supply	+ / ~	If connecting a direct current (5 to 24 VDC) source, use the positive pole, otherwise use one of the two alternating current connections (12 VAC)
Power supply	- / ~	If connecting a direct current (5 to 24 VDC) source, use the negative pole, otherwise use the second alternating current connection (12 VAC)
Battery		Plug connection for a battery (when operating without a power supply) Battery ordering code, incl. connector: SREL.BAT
NC relay 		Normally closed contact for the change-over relay. When not acted on, this contact is closed to the COM relay
COM relay		Common contact on the change-over relay. This contact is either wired to the NC relay (normally closed contact) or to the NO relay (normally open contact)
NO relay 		Normally open contact on the change-over relay. When acted on, this contact is closed to the COM relay
External antenna Brown White Green Grey Yellow	 BN WH GN GY YL	Connection for the colored cables of an extended antenna (ordering code SREL.AV)
RS-485COM RS-485A RS-485B	C A B	Bus connection for external modules
+ Vaux	+V	Typically 3.0 - 5.0V +/- 0.5V for external LED's or buzzer, max. 10mA
LED/ Buzzer/ Input 1/ CLS	F3	Multifunction connection
Serial 1/ input 2	F2	Multifunction connection
Serial 2	F1	Multifunction connection

7.0 Programming and Configuration

When you choose SmartRelay as the locking type in the SimonsVoss software (Version 1.40 and later), you have the following configuration options:



7.1 Access control

Only possible for SREL.ZK and SREL.ADV
The last 1024 transponder activation's are saved with the date and time.

7.2 Time zone control

Only possible for SREL.ZK and SREL.ADV
You can load a time zone plan and the transponders are then approved or blocked, according to their time zone group.

7.3 Overlay

Replacement transponders can overwrite the transponders that they replace. After the first operation with a replacement transponder, the system blocks the original transponder.

7.4 Flip Flop

Pulse mode (default setting) is switched off, and the pulse width does not matter any more. When flip flop mode is switched on, the SmartRelay changes its state from ON to OFF or back again, each time the transponder is activated. We recommend this mode for switching lights or machines, etc.

With an installation of this kind, it may be necessary to make sure that the power supplies and door openers are suitable for continuous current operation.

7.5 Repeater

The SmartRelay receives a transponder signal and then sends it again, amplified. You can use the SmartRelay in this function in order to link a way through larger radio paths. The distance to another SmartRelay can be up to 6.5 ft. (2 m).

7.6 Time switching

Only for SREL.ZK and SREL.ADV
If time switching is activated, you must load a time zone plan, which allows a general release of the SmartRelay during the marked times (in Group 5). This means that a door can be freely accessible during the day but only opened by transponder at night.

With an installation of this kind, you must make sure that the power supplies and door openers are suitable for continuous current operation.

If you select time switching, the "Time-controlled relay switching" field has the following option's (you may select more than one):

1. Manual locking:
   The door is not locked automatically according to the selected time of day, but instead only after an authorized transponder is operated after this time.

2. Automatic locking (default setting):
   The door is locked at exactly the time stored in the time zone plan.

3. Manual unlocking (default setting):
   The door is not unlocked automatically according to the selected time of day, but instead only after an authorized transponder is operated after this time.

4. Automatic unlocking:
   Normally, the door is not opened at the selected time of day, but instead only after operation with the first transponder. If it is required that the door always open automatically at the selected time of time, then select this option.

5. Transponder active:
   - Always:
   Normally, a transponder cannot be used during the released periods. If it is necessary, however, to be able to lock the door during this time (for example, if everyone leaves the building), then select this option.

   - Only when locked:
   In this operating mode, the transponder has no effect during the released time.

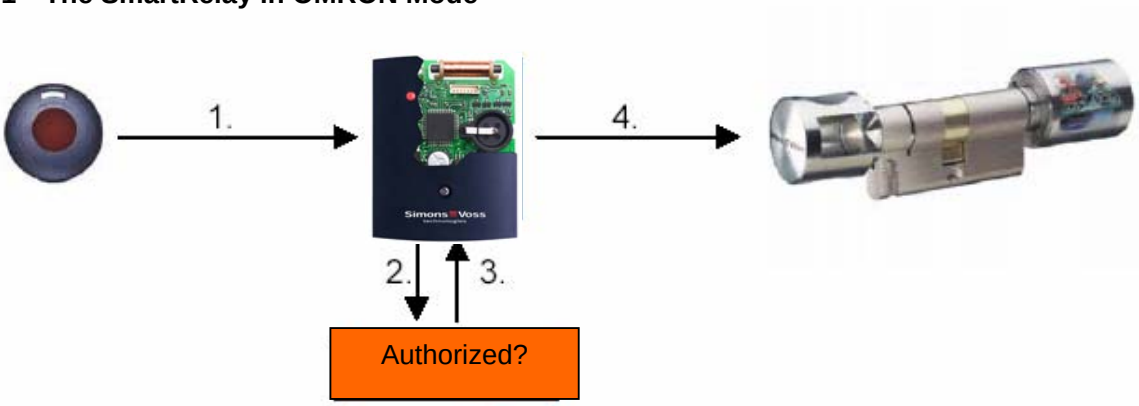
7.7 OMRON

Only for SREL.ADV
Many access control and time recording systems have serial interfaces for connection to card readers. It is also possible to connect a SmartRelay over these interfaces. This means that you can also use the SimonsVoss transponder in systems from other companies.

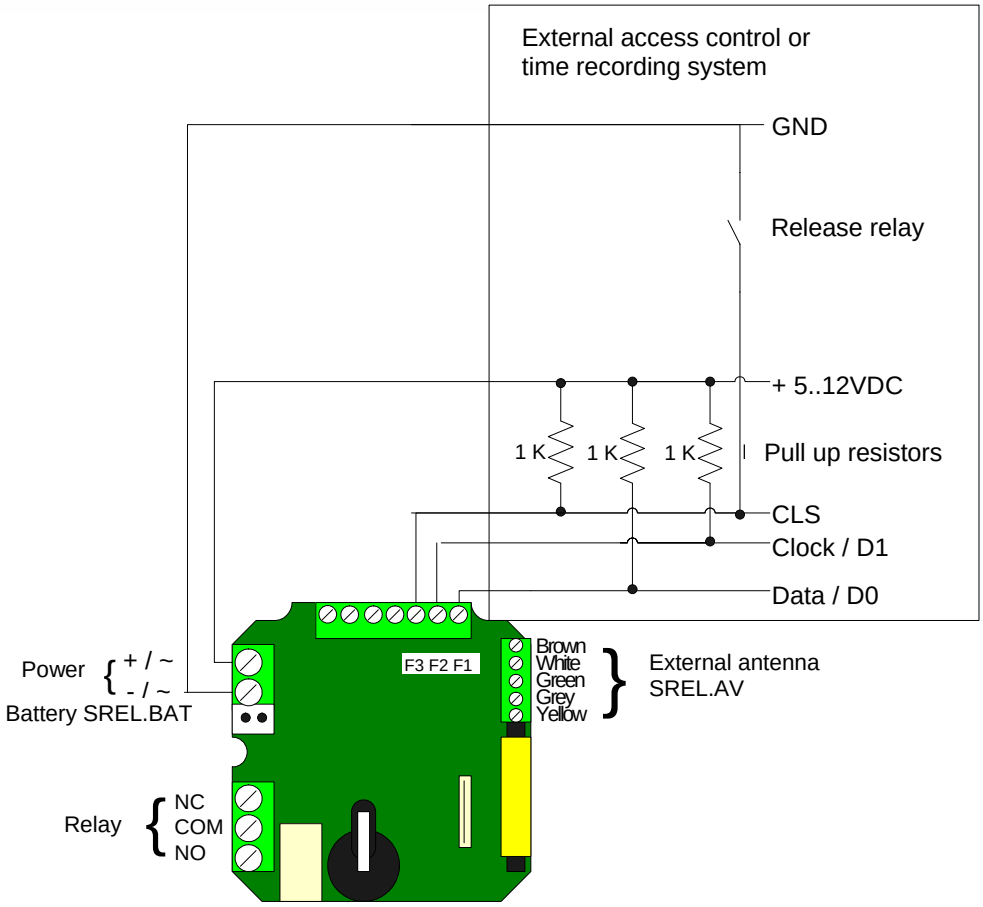
If you would like the SmartRelay to transmit the transponder data to such an external system, and for the SmartRelay to send a remote opening command to a cylinder when released by this external system, then select this option, both on the Smart Relay and on the cylinder.

Select the type of external system under "Interface" (7.13). The following types are available:

7.7.1 The SmartRelay in OMRON Mode



Access control system



7.8 No acoustic programmer acknowledge

Only SREL.ADV
Mark this field if you want no programmer acknowledge to be given via a connected buzzer/beeper when the SmartRelay is programmed.

7.9 External beeper/ External LED

Only SREL.ADV
This is where you specify which external unit is connected. In Flip Flop mode, the SmartRelay generates a continuous signal when switched if there is an external LED connected; if a beeper is connected, it briefly acknowledges each change of state with a sound signal.

7.10 Internal/ external antenna

Only SREL.ADV

- Auto-detection:
  If an external antenna is connected, only this antenna is used. The Smart Relay then switches the internal antenna off. If no external antenna is connected (default case), the SmartRelay works with the internal antenna.

- Both active:
  The SmartRelay can assess entries from transponders at both antennas.

7.11 Number of expansion modules

Only for SREL.ADV
This is where you indicate the number of external modules that are connected to the SmartRelay. These modules are connected to terminals RS-485 **C**OM, RS-485 **A** and RS-485 **B**. For more information, refer to the documentation for the separate modules.

7.12 Pulse length

This is where you specify the value, in seconds, for the pulse width of the switching pulse. The value has a range from 0.1 to 25.5 seconds. For example, if you enter 3 seconds here, then a door opener will be released for 3 seconds before it is then blocked again.

7.13 Interface

Only for SREL.ADV
For operation as a serial interface, you can select the type of card reader here that the SmartRelay should simulate. You have the following options:

- Wiegand 32 bit
- Wiegand 26 bit
- Primion
- Siemens
- Kaba Benzing
- Gantner Legic
- Isgus

You will find the corresponding cabling information in the chapter "The SmartRelay as a Serial Interface".

7.14 Restricted range

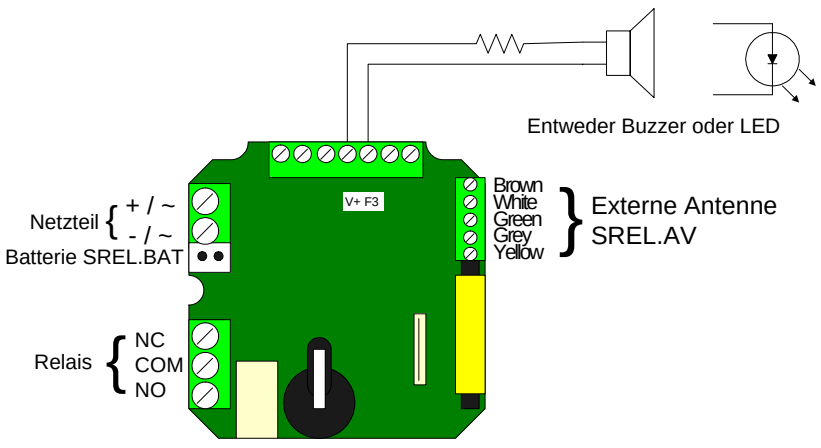
If you select this option, the reader range from the transponder > SmartRelay is restricted from approximately 4.9 ft (1.5 m) down to1.3 ft (0.4 m). For example, you can use this option if there are several SmartRelays close to one another and individual transponders are authorized for several SmartRelays.

7.15 External Beeper/ External LED

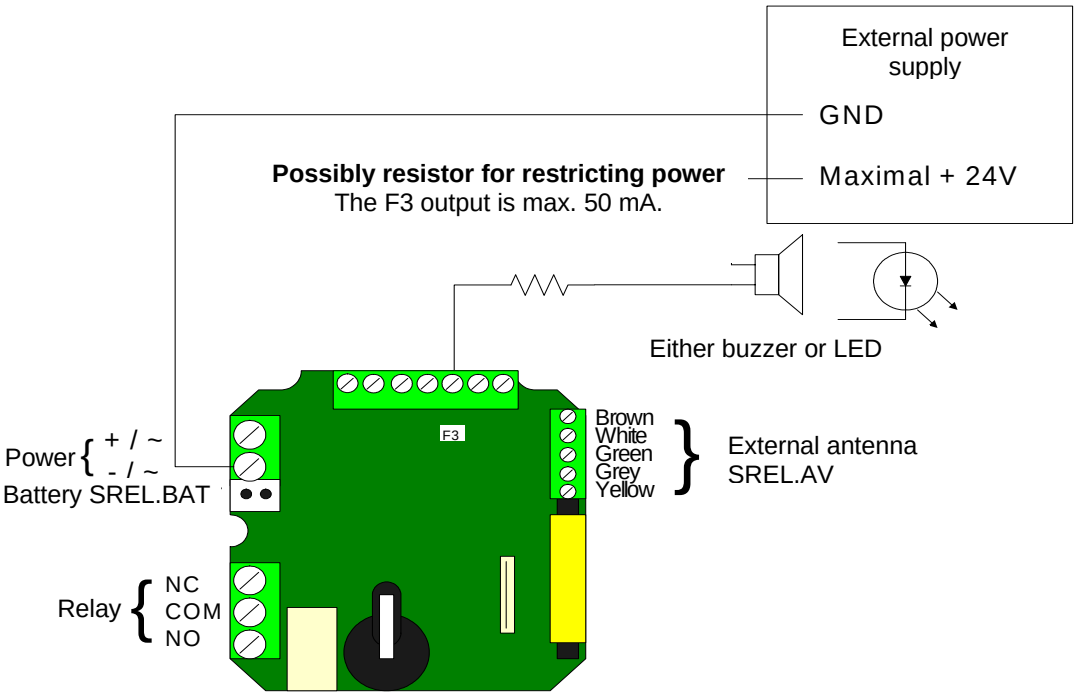
Only for SREL.ADV
Normally, the SmartRelay is configured for connection to an LED. If you want to connect a beeper or buzzer as the external signal, mark this option. In this way, the beeper/buzzer can be used for an acoustic acknowledgement, instead of the LED.

Should the connected component need less than 10 m maximum current at 3 VDC, the connecting plan can look as follows:

Possibly resistor for restricting power
The V+ output supplies a max. 10 mA at 3 VDC



If the current for the external component is larger than 10 mA, then this component must be fed by an external power supply. In this case, the connection should be made as follows:



7.16 Log unauthorized accesses

Only for SREL.ZK and SREL.ADV
Normally, only authorized transponder operations are logged. If you also want to record attempts to open the door with an unauthorized transponder, you must select this option.

8.0 Serial Interface

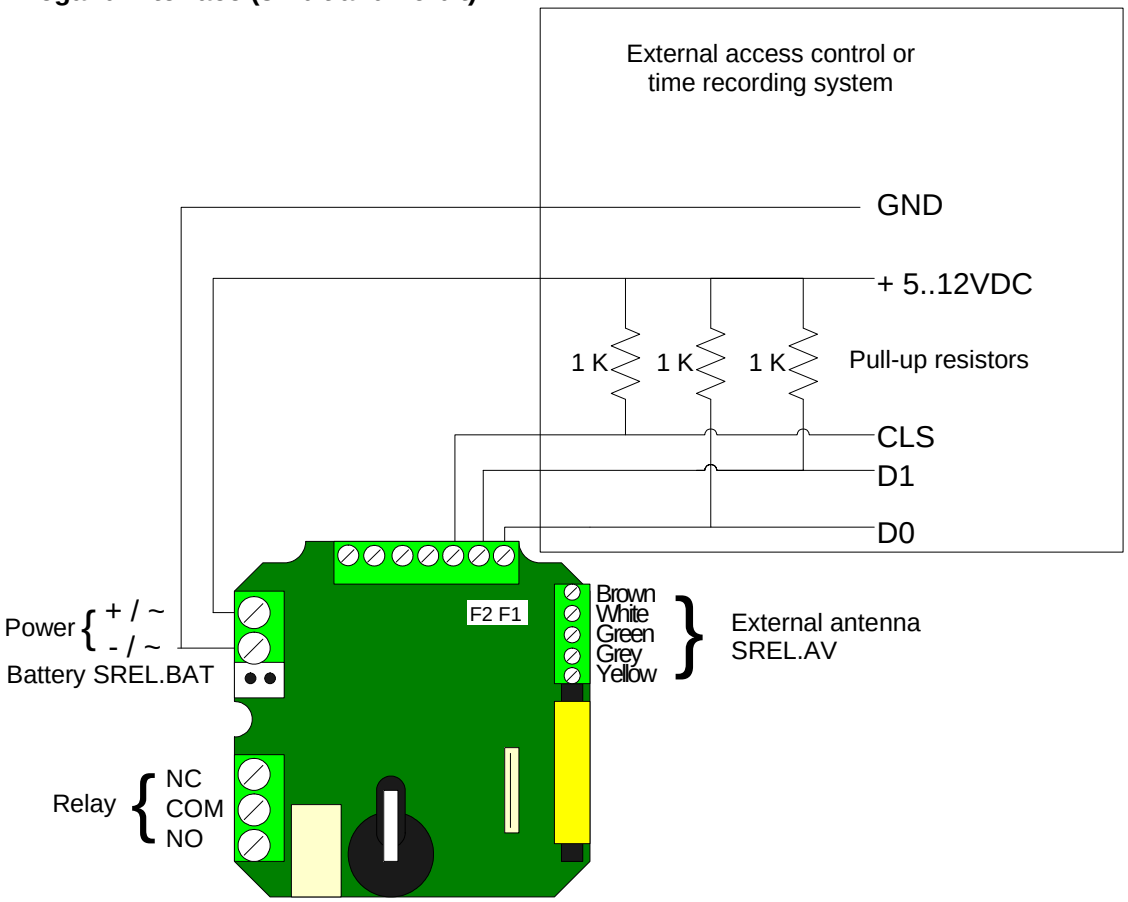
8.1 Functional Description

In order to use a SmartRelay as a card reader in an external access control or time recording system, both the hardware (cable and signal level) and the data formats must correspond exactly to those of the card reader. Only then can the external system understand and evaluate the data from the SimonsVoss transponders.

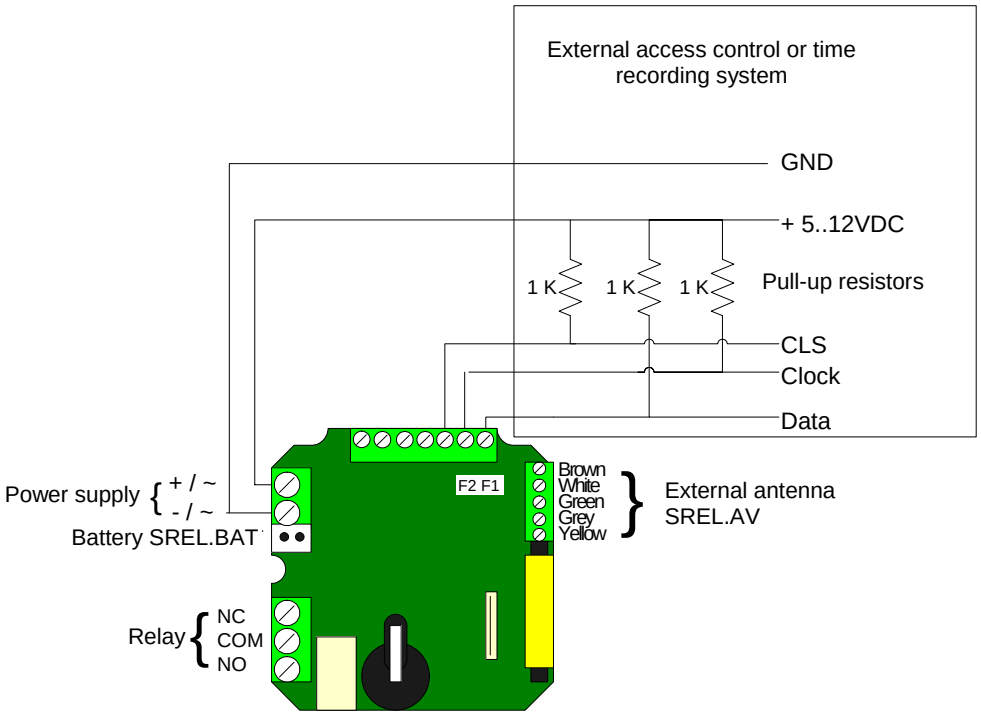
First the SmartRelay reads the transponder data. If the transponder is authorized in the SmartRelay, this data is forwarded to the external system via the serial interface. SimonsVoss Product Management will provide you with detailed specifications for the individual data formats.

You can select the correct reader type in the SmartRelay configuration using the SimonsVoss software, version 1.40 and later. The following sections describe the connections for the different reader versions.

8.2 Wiegand Interface (32 bit and 26 bit)



8.3 Kaba Benzing, Siemens, Gantner Legic, Primion, Isgus Interface



9.0 Maintenance

9.1 Battery Warning and Battery Replacement if you are using the SREL.BAT battery

In case the battery capacity is no longer sufficient, a SmartRelay can issue a battery warning as follows:

SREL, SREL.ZK, SREL.ADV

- Internal LED blinks 8 times each time you operate the transponder and before the relay is switched.

  If you are operating with a battery, you should make sure that this LED can be seen from the outside.

Only SREL.ADV

- External LED blinks 8 times or external buzzer beeps 8 times, each time you operate the transponder.

Approximately 100 operations are possible after the battery warning, so you should replace the battery as soon as possible.

9.2 Backup Battery

A discharged backup battery can cause the internal clock in the type SREL.ZK or SREL.ADV SmartRelay to stop. For this reason, we recommend that you check the time of day at routine intervals. A backup battery will last approximately 10 years if there is no power supply interruption. If the SmartRelay needs the backup battery often because of frequent power failures, you should replace this battery routinely.

If you operate the SmartRelay with a battery (SREL.BAT), you are not permitted to use the backup battery.

10.0 Data sheet

Housing made of black plastic: Dimensions [LxWxH]	72 x 57 x 25.5 mm (approximately 2.8 x 2.2 x 1.0 inches)
Degree of protection	IP 20 (NEMA1), not tested for outside use
Temperature	Operation at: -31°F to +131°F (-22°C to +55°C) Storage at: 32°F to +104°F (0°C to +40°C)
Air humidity	<95% without moisture condensation
Printed circuit board dimensions [LxWxH]	50 x 50 x 14 mm (approximately 2.0 x 2.0 x 0.6 inches)
Line voltage	12 VAC or 5-24 VDC (no reverse voltage protection)
Power limit	Power supply must be limited to 15 VA
Quiescent current	< 5 mA
Max. current	< 100 mA
Programmable pulse width	0.1 to 25.5 seconds
Output relay type	Change-over
Output relay continuous current	Max. 1.0 A
Output relay switch on current	Max. 2.0 A
Output relay switching voltage	Max. 24 V
Output relay switching capacity	10^6 operations at 30 VA
Multifunction connections: F1, F2, F3	Max. 24 VDC, max. 50mA
Vibrations	15G for 11 ms, 6 shocks according to IEC 68-2-27 Not released for continuous used under Vibrations