# Functional Description

Key: **5WK4 9250 / 5WK4 9259**

SIEMENS VDO
Automotive

PK : FCC ID:KR55WK49250 IC:267T-5WK49250
RK : FCC ID:KR55WK49259 IC:267T-5WK49259

# User Manual

of the

Siemens VDO

Radio Frequency Transmitter

Type

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RK: 5WK49259

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# 1. GENERAL DESCRIPTION OF THE RF TRANSMITTER

The RF remote control system consists of a RF transmitter and a RF receiver module, mounted into the vehicle. This transmitter is used to transmit information for locking or unlocking the vehicle by unidirectional RF transmission. For standard remote operation, which is provided by the "Remote Key"(RK) one of the 5 buttons have to be pressed. For the so called "passive access" function of the so-called "Passive Key"(PK), the key receives a magnetic 125kHz trigger command to send the locking / unlocking and start information to the vehicle by the same RF transmission.
The RF-transmission is Manchester coded with FSK modulation and send twice on two different channels within the same band.
Additionally a separate transponder for the immobilizer function is inserted in the nozzle, working with a bidirectional magnetic 125-135kHz carrier.

In general the following functions are provided:

- Lock the car
- Unlock the car
- Approach light/ Car-Locator button
- Unlock the trunk lid
- Panic alarm
- Immobilizer

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## 2. Power supply

The transmitter is provided with 1 lithium battery (CR2450) that gives a power supply of +3V.

## 3. BUTTONS

The buttons are use to trigger some functions depending of the software which is running with the transmitter. There are two different software: one is the application software and is used for the final product. The other is test software and it is used only in the development phase or for the homologation procedure.

### *3.1 Application mode*

There are five buttons with following functions:

| Action: | Usage: |
|---|---|
| Pressing the lock button | Central locking |
| | Activation of Alarm system |
| | Deactivation of Panic Alarm |
| Pressing the unlock button | Central unlocking |
| | Deactivation of alarm system |
| | Deactivation of Panic Alarm |
| Pressing the trunk button | Unlocking of trunk lid |
| | Deactivation of Panic Alarm |
| Pressing the approach light button | De-/activation of Approach Light |
| | Deactivation of Panic Alarm |
| Pressing the panic button | Activation of Panic Alarm |
| | Deactivation of Panic Alarm |
| Pressing one of the buttons longer than 2 sec. | Short comfort telegrams are transmitted periodically. After 6 sec the transmission is stopped at all. |

### *3.2 Test mode*

#### 3.2.1 PK with test mode SW

Only 1 button is processed at a time – button combinations are not processed. Only the buttons with high priority can start the transmission, but any button can stop the transmission as described bellow.

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The buttons have the following priority: LOCK and TRUNK (high priority), UNLOCK and PANIC (low priority). Button Light is not used in test mode but it can stop the transmission.

| Action: | Usage: |
|---|---|
| Pressing the **lock** button<br>1st to 6th button (Test_mode_1) press | sends continuous wave (CW) on 433.66MHz and 433.68MHz alternative without modulation |
| 7th button press | turns testmode off. |
| Pressing the **unlock** button:<br>if the key is not already in Test_mode_1, turns it off,<br>else: 1st button press | sends continuous "1" Manchester coded with baudrate 5.67K, i.e. FSK modulated with 11.6KHz, the center frequency is 433.67MHz. |
| 2nd button press | sends continuous "0" Manchester coded with baudrate 5.67Kb, i.e. FSK modulated with 11.6KHz , the center frequency is 433.67MHz. |
| Pressing the **trunk** button<br>1st to 6th button (Test_mode_2) press<br>7th button press | sends continuous wave on 434.245MHz and 434.256MHz alternative without modulation |
| | turns testmode off. |
| Pressing the **panic** button:<br>if the key is not already in Test_mode_2, turns it off,<br>else: 1st button press | sends continuous "1" Manchester coded with baudrate 5.67K , FSK modulated with 11.6KHz , the center frequency is 434.251MHz. |
| 2nd button press | sends continuous "0" Manchester coded with baudrate 5.67Kb , FSK modulated with 11.6KHz , the center frequency is 434.251MHz. |

### 3.2.2 RK with test mode SW

The test functions are triggered by button presses. Only 1 button is processed at a time – button combinations are not processed. Only the buttons with high priority can start the transmission, but any button can stop the transmission as described below. The buttons have the following priority: LOCK and TRUNK (high priority), UNLOCK and PANIC (low priority).

| Action: | Usage: |
|---|---|
| Pressing the **lock** button<br>1st button (Test_mode_1) press | sends continuous wave on 433.67Mhz without modulation |
| 2nd button press<br>In 5 minutes after the last button press, | sends continuous wave on 433.67Mhz without modulation |

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| | |
|---|---|
| the key is turned off. | |
| Pressing the **unlock** button:<br>If the key is not already in Test_mode_1, the key is turned off, else ==========> | => sends continuous "0" Manchester coded with baudrate 5.67K , i.e. FSK modulated with 11.6KHz , the center frequency is 433.67MHz. |
| Pressing the **trunk** button<br>1st button (Test_mode_2) press | sends continuous wave on 434.251Mhz without modulation |
| 2nd button press<br>In 5 minutes after the last button press, the key is turned off. | sends continuous wave on 434.251Mhz without modulation |
| Pressing the **panic** button:<br>If the key is not already in Test_mode_1, the key is turned off, else ==========> | => sends continuous "0" Manchester coded with baudrate 5.67K , i.e. modulated with 11.6KHz , the center frequency is 434.251MHz. |

## 4. TYPICAL USAGE PATTERN (for Europe only)

10 lock and unlock operations in 24 hours with over all transmission duration of 6 seconds (10 x 2 x 2 x 150ms/operation)
4 lock and unlock operation with comfort telegrams (each 1sec sending x 2 channels) in 24 hours with over all transmission duration of 16 seconds (4 x 2 x 1 x 2s)

⇨ total transmission duration of 22 seconds within 24 hours

| | |
|---|---|
| Transmitter ON | 0.9 seconds/hour |
| Transmitter OFF | 3599 seconds/hour |

Duty Cycle: $T_{ON}$ / $T_{(ON+OFF)}$ x 100%=0.9 / 3600 x 100% = 0.025%

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## 6. TECHNICAL DATA

| | |
|---|---|
| Carrier frequency: | 433.67MHz ± 0.02%<br>434.251MHz ± 0.02% |
| Output power: | comply with FCC part 15 |
| Type of modulation: | FSK |
| Method of generation: | PLL |
| Number of channels: | 2 |

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| | |
|---|---|
| Power supply: | battery (CR2450) |
| Type of battery: | lithium coin cell |
| Transmission range: | <50m |

**NOTE:**
Changes or modification not explicitly approved by the manufacturer could void the user's authority to operate the equipment.

## 7. LABEL DESIGN EUROPE, USA, China

| For PK | For RK |
|---|---|
| Siemens VDO CE<br>5WK49250<br>IC: 267T-5WK49250<br>FCC ID:KR55WK49250 | Siemens AG VDO CE<br>5WK49259<br>IC: 267T-5WK49259<br>FCC ID:KR55WK49259 |

**Entry Owners Manual:**

NOTE
This device complies with part 15 of the FCC Rules and with RSS -210 of Industry Canada. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept interference received, including interference that may cause undesired operation.

CAUTION
Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.
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