

**User Manual**

**of the**

**SIEMENS VDO**

**Immobiliser and remote control system**

**type**

**HMC GH**

## **FUNCTIONAL DESCRIPTION**

### **1. System Components**

The HMC GH System is a vehicle immobilisation and remote keyless entry (RKE) system. This system consists of a body controller module (BCM), an immobiliser antenna with corresponding transponder and a RKE transmitter.

#### **System Operation:**

The HMC GH System combines two sub-systems: an immobiliser system and a remote keyless entry system into one system that performs the functions of both modules. Remote keyless entry function is provided by the RF sub-system of the BCM and the RKE transmitter. On the other hand, the immobiliser function is provided by the LF sub-system of the BCM and the transponder located in the key. The operation of these functions are as follows:

#### **Immobiliser Operation**

The immobiliser system is a passive immobilization system. The immobiliser antenna uses a magnetic couple to read the transponder's identification code. The communication between the immobiliser and transponder is encrypted. The BCM compares the identification code received from the transponder with the identification codes stored in its non-volatile memory. If the identification code from the transponder matches one of the identification codes stored in memory, the BCM sends a "Valid Key" message and associated "rolling code" to the Engine Management System controller. If there is no match, the module sends an "Invalid Key" message to the Engine Management System controller. This causes the Engine Management System to turn off the engine.

#### **Remote keyless Entry:**

The RKE transmitter transmits at 315 MHz an ASK modulated data signal to the BCM. The RF sub-system of BCM receives this encrypted RF signal. The BCM then decrypts the signal and broadcasts the requested remote commands to the appropriate control modules in the vehicle through K-line bus. In general the following functions are provided:

- Lock the car
- Unlock the car
- Unlock the trunk of the car

## 2. Variants:

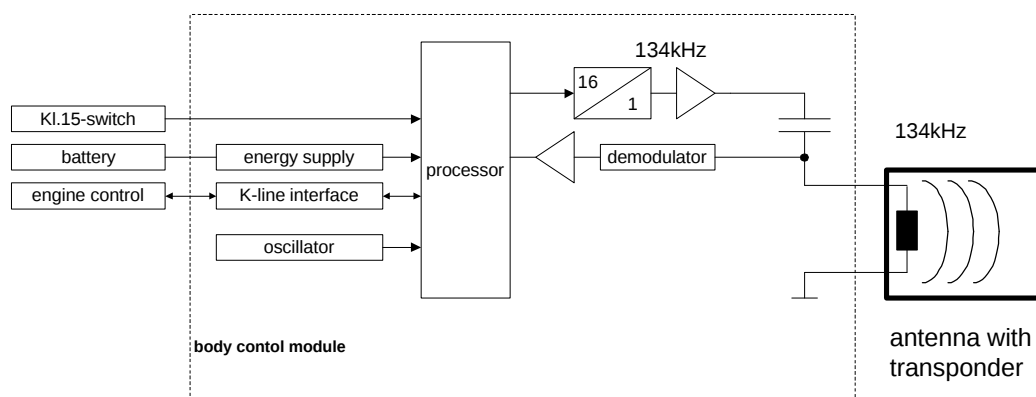
| Type designation | Difference                         |
|------------------|------------------------------------|
| 5WY8406          | Immobiliser antenna car line DASOM |
| 5WY8407          | Immobiliser antenna car line PIC   |
| 5WY8404          | RKE transmitter 315 MHz            |

The immobiliser antenna for car line PIC (type 5WY8407) uses the same schematic and pcb, but a slightly different assembly like the immobiliser antenna for car line DASOM (type 5WY8406).

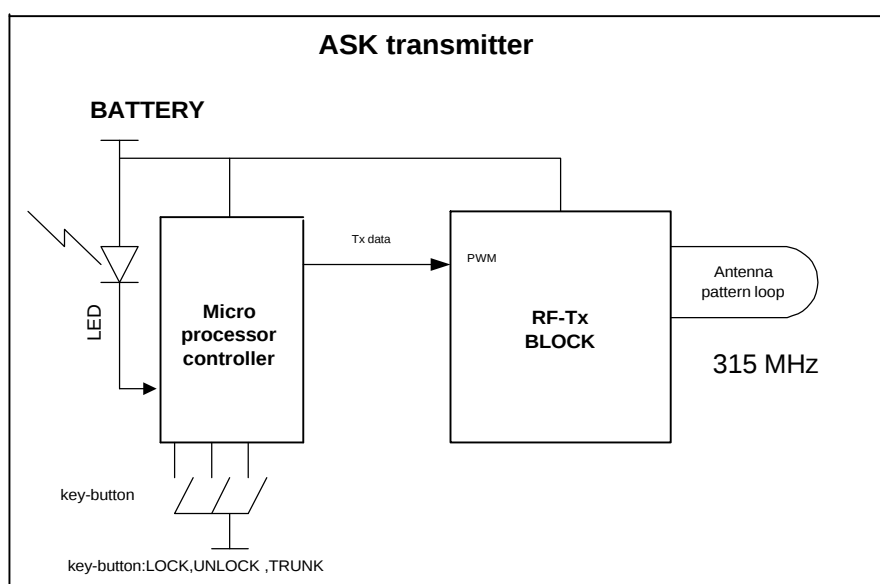
The assembly differs in the value of resistor R7: 5WY8407 uses 30.1Ohm and 5WY8406 uses 26.1Ohm

## 3. Block diagram

### Immobiliser Block Diagram:



### Block diagram RKE transmitter:



#### **4. Technical Data Immobiliser system:**

|                              |                        |
|------------------------------|------------------------|
| Carrier frequency:           | 134.2 kHz ± 800Hz      |
| Output power/field strength: | < 42dBμA/m @ 10 metres |
| Type of modulation:          | FSK                    |
| Number of channels:          | 1                      |
| Power supply:                | 12.8 V DC              |
| Type of battery:             | vehicle battery        |
| Transmission range:          | 5 centimeter           |

#### **5. Typical usage pattern Immobiliser system**

50 immobiliser operations in 24 hours with a typical transmission duration of 0.425 seconds → 21.25 seconds transmission duration in 24 hours → 0.89 seconds transmission in 1 hour

|                                                                                        |          |                |
|----------------------------------------------------------------------------------------|----------|----------------|
| Transmitter ON                                                                         | 0.89     | seconds / hour |
| Transmitter OFF                                                                        | 3,599.11 | seconds / hour |
| Duty Cycle: $T_{ON} / T_{(ON+OFF)} \times 100\% = 0.89 / 3,600 \times 100\% = 0.025\%$ |          |                |

#### **6.1 Label Design Immobiliser for Europe**

Siemens VDO  
5WY8406  
5WY8407



#### **6.2 Label Design Immobiliser for USA/CAN**

Siemens VDO

5WY8406  
IC: 267T-5WY8406  
FCC ID:KR55WY8406

5WY8407  
IC:267T-5WY8407  
FCC ID:KR55WY8407

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 interference received, including that may cause undesired operation.

## **7. Technical Data transmitter**

|                       |                      |
|-----------------------|----------------------|
| Carrier frequency:    | 315 MHz $\pm$ 150kHz |
| Output power Europe:  | < 10mW               |
| Modulation:           | ASK                  |
| Frequency Generation: | SAW                  |
| Number of channels:   | 1                    |
| Supply voltage:       | 3 V                  |
| Battery type:         | lithium, CR 2032     |
| Range:                | < 6m                 |

## **8. Typical usage pattern RKE transmitter**

30 lock / unlock operations in 24 hours with a typical transmission duration of 270 milliseconds → 1.25 lock / unlock operations / hour

Transmitter ON      0.3375                      seconds / hour

Transmitter OFF    3,599.6625    seconds / hour

Duty Cycle:  $T_{ON} / T_{(ON+OFF)} \times 100\% = 0.3375 / 3,600 \times 100\% = 0,009\%$

## **9.1 Label Design transmitter for Europe**

Siemens VDO  
5WY8405



## **9.2 Label Design transmitter for USA/CAN**

Siemens VDO

5WY8404  
IC: 267T-5WY8404  
FCC ID:KR55WY8404

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 interference received, including that may cause undesired operation.

### **NOTE:**

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