

**Functional Description**

**of the**

**Siemens**

**Immobiliser system type Nissan U5A**

## **Description of the Siemens immobiliser system type Nissan U5A**

This equipment is a vehicle anti-theft device to prevent from the unauthorized use of a motor vehicle. The equipment allows the ignition system to be disabled when the ignition system is manipulated without using the proper key, such as by direct connection of power supplying lines or breakdown of the key-cylinder. The system is a radio frequency apparatus comprising of a transponder integrally incorporated within the ignition key, a radio frequency module (RFM) with an antenna installed on the key-cylinder case and a controller (BCM) controlling the operation of the RF module.

Whenever the ignition key is inserted the key-cylinder and turned to the "ON" position, the RFM continues to generate a radio frequency carrier operating on frequency 125kHz powered by the BCM, and bi-directional transmission in half duplex mode between the BCM and the transponder occurs. The transponder requires no internal power supply; it derives its power from the magnetic component of the radio frequency carrier. Data is stored in the transponder and the BCM in its non-volatile memory (EEPROM). Data is transmitted via radio frequency link by ASK-modulating this carrier. Absorption modulation is used to transmit data from the transponder to the BCM. The transponder absorbs the magnetic field which hence modulates the current in the antenna of the RFM.

Upon receiving the start command from the BCM, the energized transponder transmits its identifier to the BCM. The BCM sends its own password together with a set of random numbers to the transponder in return. If the received password matches the password stored in the transponder, the transponder reprogrammed the data using its own password and the set of random numbers received in accordance with the pre-determined protocol, data with the pre-calculated data using the transponder's password stored in the BCM and same random numbers in turn, whereupon the matching being verified as a result of the comparison. After the comparison the BCM sends the result of the comparison to the engine control module. When coincidence has been verified, the engine control module enables the engine to be activated, but when the result is negative it will not allow the engine to be activated.

Whenever the ignition switch is turned from the ON position to the OFF position during processing, the system is shifted to ignition OFF mode. The BCM causes the indication lamp on the dashboard to flash when the ignition switch is in the OFF position or a malfunction of the system occurs. The engine control module sends a rolling code to the BCM every time the ignition switch is turned from the OFF position to the ON position in order to watch for an unauthorized replacement or a manipulation of the controller.

### **System components:**

Type designation	funktion	manufacturer
284B2 C9911	Body controller module	Calsonic Kansei
28590 C9965	Radio frequency module	Siemens VDO

**Technical Data:**

Carrier frequency:	125 kHz $\pm$ 1,5%
Output power/field strength:	< 42 dB $\mu$ A/m @ 10 metres
Type of modulation:	AM (Amplitude Modulation)
Method of frequency generation:	SAW
Number of channels:	1
Power supply:	12,8 V DC
Type of battery:	vehicle battery
Transmission range:	5 centimeter

**Duty Cycle acc. to EN 300 330:**

5 actuations of immobilizer within 24 hours with a typical transmission time of 0,6 seconds

Transmission time T<sub>ON</sub>      3                      seconds / 24 hours

Off time T<sub>OFF</sub>                      86.397                      seconds / 24 hours

Duty Cycle: T<sub>ON</sub> / T<sub>(ON+OFF)</sub> x 100% = 3 / 86.400 x 100 % = 0,003 %

**Label design:**

Body controller module:



284B2 C9911

FCC ID:KR5Nissan\_U5A

CAN: 267 xxx xxxx

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 interference that may cause undesired operation.

Radio frequency module:



**SIEMENS**

28590 C9965

Made in Mexico

5WK4 8043



## Block Diagram

