

SIEMENS AG, Siemens VDO Automotive
FCC ID:KR55WY7776

SV C BC S51 PM2
IC:267T -5WY7776

**Functional Description /
User Manual
of

SIEMENS VDO

Immobilization system smart 451

Type 5WY7776**

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Components outside of the smart immobilizer are:

- 7. Transponder coil in the key: This coil is magnetically coupled at 125 kHz to the LF antenna (4).
- 8. Transponder IC in the key. The IC is connected to a parallel resonant circuit formed by the transponder coil (7) and a capacitor. It derives its power supply from the magnetic field established by the immobilizer. The IC provides contactless communication with the immobilizer by demodulating the signals received from the immobilizer and by sending data the immobilizer via ASK (amplitude shift keying) modulation.
- 9. SAM ("Sicherungs- und Ansteuerungsmodul". This Body controller supplies the immobilizer with battery voltage either via ignition (European SAM variant) or via switched battery voltage (US SAM variant).

The SAM contains a microcontroller that controls the complete communication to and from the transponder including cryptology. The SAM communicates with the Engine control module (10) via CAN-bus.

- 10. ECM (Engine control module)

2. Immobilizer parts

The immobilizer consists of the following parts (see explosion view in Figure 2):

1. Housing including LF antenna, pins for the PCB and connector
2. populated PCB
3. cover
4. label.

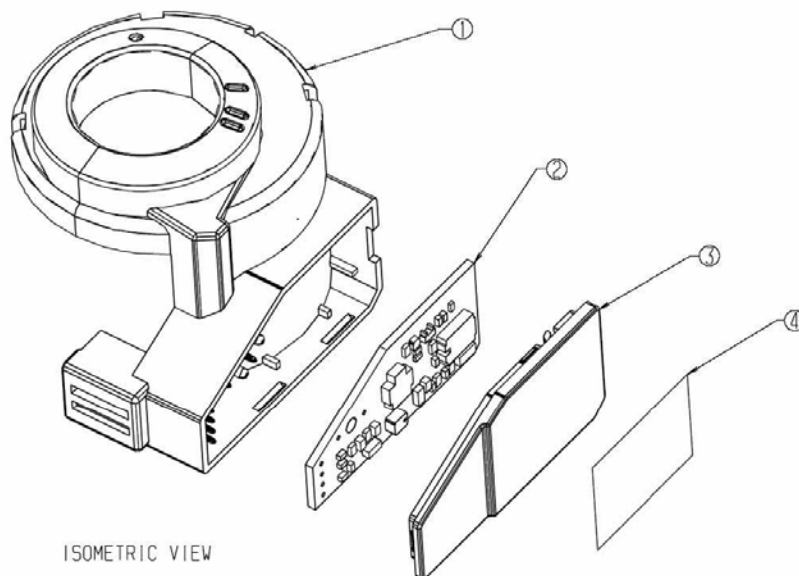


Figure 2) Explosion view of immobilizer

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3. Technical Data

Carrier frequency:	125 kHz $\pm$ 1.25 kHz
Carrier field strength:	< 40dB μ A/m @10m
Modulation:	ASK
Supply voltage:	12 V
Battery type:	Car battery
Range:	< 55mm
Loop coil antenna area:	0.0010 m ²

4. Typical usage pattern (for Europe only)

50 immobilizer 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

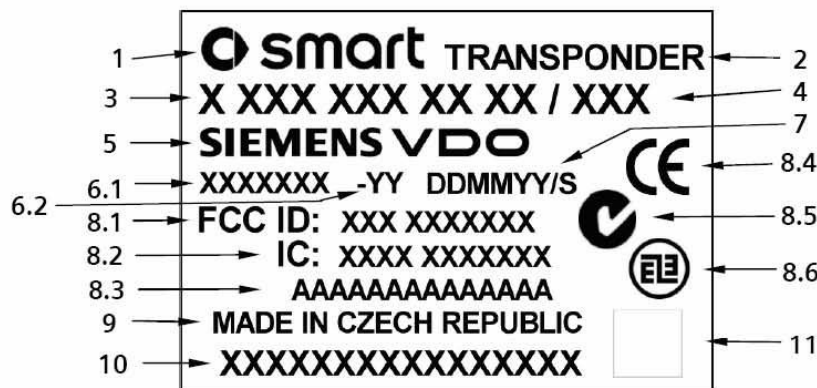
Transmitter OFF 3,599.11 seconds / hour

Duty Cycle: $T_{ON} / T_{(ON+OFF)} \times 100\% = 0.89 / 3,600 \times 100\% = 0.025\%$

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Label Design



Data shown in picture does not change over product lifetime.
XX, YY, AA, DD, MM and S are placeholders for changeable data.

NOTES FOR SMART IMMOBILIZER PRODUCTION LABEL:

1. CUSTOMER LOGO (supplied by Customer, size: 2.3 x 11.5 mm).
2. CUSTOMER PRODUCT NAME (Arial Font, Size 6, Bold,).
3. CUSTOMER PART NUMBER
(11 Digits, Arial Font, Size 7, Bold, defined by customer, e.g.: A 451 820 15 97).
4. CUSTOMER INDEX
(2 to 4 DIGITS, Arial Font, Size 7, Bold, defined by customer, e.g.: / 001).
5. SV LOGO (size 1.5 x 17 mm).
- 6.1 SV PRODUCT ID (7 Digits, Arial Font, Size 5, Bold, e.g.: 5WY7776).
- 6.2 SV PRODUCT ID INDEX (2 Digits, Arial Font, Size 5, Bold).
7. PRODUCTION DATE / SHIFT (8 Digits, Format DDMMYY and Shift, Arial Font, Size 5, Bold).
8. HOMOLOGATION / RECEIVER CERTIFICATIONS (AUSTRALIA, CANADA, EU, USA)
- 8.1 FCC ID NUMBER FOR USA, (10 alphanumerics, Arial Font, Size 5, Bold).
- 8.2 IC NUMBER FOR CANADA, (11 alphanumerics, Arial Font, Size 5, Bold).
- 8.3 TAIWAN HOMOLOGATION NUMBER, (14 alphanumerics, Arial Font, Size 5, Bold)
- 8.4 EUROPEAN UNION HOMOLOGATION SYMBOL, (defined by country, size 3 x 3 mm).
- 8.5 AUSTRALIAN HOMOLOGATION SYMBOL, (defined by country, size 3 x 3 mm).
- 8.6 TAIWANESE HOMOLOGATION SYMBOL, (defined by country, size 3 x 3 mm).
9. COUNTRY OF ORIGIN (Arial Font, size 5, Bold).
11. DATAMATRIX FIELD; CONTENT DEVICE SERIAL NUMBER
(Size 3.5 mm Square (5 mm square needed) used by SV and customer, no frame)
10. SV DEVICE SERIAL NUMBER, PER LOCAL MANUFACTURING REQUIREMENT
(16 Digits, Arial Font, Size 6, Bold).

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5. Label

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Owner 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.