

User Manual / Functional Description

of the

Continental

**RF Transmitter
Global A Flap Key**

Type

**5WK50079
5WK50073**

General System Description

The RF-remote control system is a subsystem of a Body Computer Module (BCM) for an automotive carline.

It consists out of a tuning free RF- transmitter in the key and the receiver module, which is directly connected to BCM control unit.

General description RF transmitter

The RF Transmitter is contained within the head of the vehicle key. It contains a microprocessor controlled RF transmitter for sending commands to the RF receiver to remotely control certain vehicle functions, including Lock, Unlock, Trunk, Panic and Remote Start. The RF receiver then sends received messages to the BCM to activate functions directly or by sending a GMLAN message.

The RF transmitter also communicates with the immobilizer base station via a LF inductive link to authorize the vehicle to start. The transmitter contains a unique ID code and a vehicle password that is used in a mutual authentication process with the base station. A successful mutual authentication is required before the vehicle engine is allowed to be started.

The transmitters will have different buttons (2, 3, 4 or 5) and different frequencies. The 2 and 3 buttons versions are depopulated versions of the 4 button transmitter. The 5 button design is a same layout like the 4 button transmitter but one micro switch is located at different positions.

The Vehicle Key Electronics shall provide the following functions:

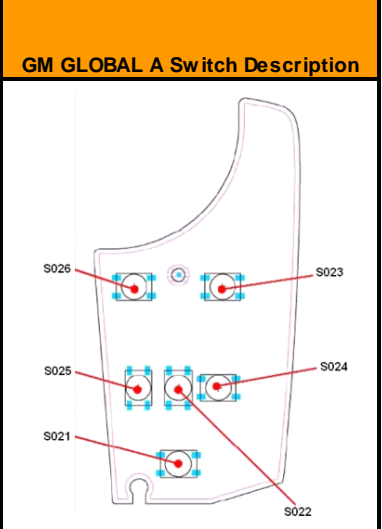
1. Secure GM RF Link - the Vehicle Key Electronics shall provide for a secure RF data link between customer-carried transmitters and the RF receiver. This link shall be uniquely keyed to individual physical transmitter units, providing both fixed and rolling codes.
2. Low Battery Monitoring and Communication - the Vehicle Key Electronics shall provide the capability of determining that its battery has reached near its end of useful life.
3. Replaceable battery - the Vehicle Key, including the Key Electronics, shall support use of a replaceable CR2032 battery, with continued safe operation after completion of battery replacement by the operator.

Buttons

The action is performed until:

- the button that triggered the test mode is pressed again
- timeout is reached (250ms)
- other button is pressed, in which case the action shall be stopped and the corresponding action for the new button shall be started)

GM GLOBAL A Switch Description



Button Name (RKE function)	Sw itch	PCF 7941 input	testpoint	RKE command byte
Panic	S021	P10	P021	0x02
Trunk2	S022	P12	P022	0x01
Lock	S023	P11	P023	0x04
EngineStart	S024	P22	P024	0x10
Trunk1	S025	P21	P025	0x01
Unlock	S026	P13	P026	0x08

Transmitter Variants

Serial Number	No of button	Frequency		Switch number					
		433,92	314,90	S021	S022	S023	S024	S025	S026
5WK5 0073	5		X	X		X	X	X	X
5WK5 0074	4		X	X	X	X			X
5WK5 0075	3		X		X	X			X
5WK5 0076	2		X			X			X
5WK5 0079	5	X		X		X	X	X	X
5WK5 0080	4	X		X	X	X			X
5WK5 0081	3	X			X	X			X
5WK5 0082	2	X				X			X
5WK5 0157	3		X	X		X			X
5WK5 0158	3	X		X		X			X
5WY64000	4		X			X	X	X	X

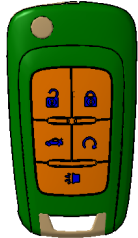


Key Design

The key housing will be delivered with different logos.

Used PCBA	Number of button	Top view of the key	Possible branding's on the button side				
5WK5 0082 5WK5 0076	Flap Key 2 Button						
5WK5 0081 5WK5 0075	Flap Key 3 Buttons						
5WK5 0157 5WK5 0158	Flap Key 3 Buttons						
5WK5 0080	Flap Key 4 Buttons						
5WK5 0074	Flap Key 4 Buttons						
5WY6 4000	Flap Key 4 Buttons	No picture available at the moment. Is in design.					

IC:7812D-5WK50073
IC:7812D-5WK50079

FCC ID:KR55WK50073
FCC ID:KR55WK50079

<p>5WK5 0079</p> <p>5WK5 0073</p>	<p>Flap Key 5 Buttons</p>						
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Transmission format

Modulation data rate: 1 KBaud
 Bit coding: Bi- Phase Code
 Transmission cycle: data protocol is transmitted five times after each button press

Mechanical Design

Transponder

Low frequency (LF) magnetic field generated by the base station;
 Emulated transponder within PCF7941ETT IC;
 Carrier frequency: 125 kHz
 Modulation: ASK
 Data rate: 4,0 kbps for Reading*
 5,2 kbps for Writing*
 Data coding: Manchester for Reading
 BPLM (Binary Pulse Length Modulation) for Writing
 Protocol: Hitag2

* Reading means data transmission from the transponder to the base station.

* Writing means data transmission from the base station to the transponder.

IC:7812D-5WK50073
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FCC ID:KR55WK50073
 FCC ID:KR55WK50079

UHF transmitter

314,90 MHz Variant, Countries: USA, Japan

Carrier frequency

Parameter	Min	Rated	Max
Carrier frequency	314.825MHz	314.90MHz	314.975MHz

Carrier strength (measured in CW mode)

Country	Carrier frequency	Carrier strength	
		rated	tolerance
USA	314.90MHz	-14.6 dBm	±3dB
Japan	314.90MHz	-14.6 dBm	±3dB

Modulation: ASK

Baud rate

Country	Baudrate		
	Min	Typ.	Max
USA	4.15k	4.2k	4.25k
Japan			

Data coding: Manchester

433,92 MHz Variant, Countries: South Korea, China, Europe.

Carrier frequency

Parameter	Min	Rated	Max
Carrier frequency	433.845MHz	433.92MHz	433.995MHz

Carrier strength (measured in CW mode)

Country	Carrier frequency	Carrier strength	
		rated	tolerance
South Korea	433.92MHz	- 11.4 dBm	±3dB
China	433.92MHz	- 11.4 dBm	±3dB
Europe	433.92MHz	- 11.4 dBm	±3dB

Modulation: ASK

Data rate

Country	Baudrate		
	Min	Typ.	Max
South Korea, China, Europe	4.15k	4.2k	4.25k

Data coding: Manchester

Power supply

Battery type: CR2032, 230mAh

Parameter	Min	Typ.	Max
Battery voltage (VBAT)	2.2V	3V	3.5V

Threshold for LVI (Low Voltage Indicator): 2.56V typical
Empty battery threshold (no RF transmission): 2.37V typical

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Technical Data

Operating voltage: 2,2 V...3,5V
Battery voltage: 3V (nominal)
Low voltage indication: <2,37V
Current consumption (transmitting): 5 mA
Current consumption (inactive): ≤ 1 µA
Battery: Lithium cell (CR2032)
Carrier frequency: 433.92 MHz & 314,90 MHz (±75 KHz)
Type of modulation: Bi- Phase Code
Baudrate: 1 kBaud

Label Design /Owner Manual

EU:

Continental
5WK50079



Canada:

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5WK50079
IC:7812D-5WK50079

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5WK50073
IC:7812D-5WK50073

Owner Manual:

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.

FCC:

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5WK50073
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Owner Manual:

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.