



Hella KGaA Hueck & Co
59552 Lippstadt

FCC ID: KR5MARSKEYLESS

USER MANUAL STATEMENT LETTER

HELLA KGaA HUECK & CO. will supply the following information to the reseller/distributor (car manufacturer) dictating what must be included in the end user's manual for the commercial product:

1. Owner Manual USA

FCC ID: KR5MARSKEYLESS

FCC § 15.19 Labelling requirements

This device complies with part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). 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 § 15.21 Information to user

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The MARS Keyless product provides the convenient feature to enter and start the vehicle without the usage of key fob actively.

The MARS EIS ECU consists of LF Driver Part that is connected with LF Antennas.
A UID is to be found inside or outside the vehicle.

- Passive Entry / Exit

A Person with the UID nears to the locked vehicle. If he grabs the door handle an electronic device is activated and the complete Keyless Entry Protocol is started: The side LF antenna is transmitting LF data and a carrier signal, which can be recognized and judged by quantity (RSSI-measurement) by the UID. The measured field strength is sent to the ECU via UHF and is judged. If the magnetic field strength is fitting to a certain RSSI value limit pattern, the doors will unlock.

The additional LF communication guaranties the functionality, that only the valid key OUTSIDE the vehicle authenticates the system to unlock the car passively.

If the magnetic field strength that is send to the ECU to judge is not high enough (e.g. the UID is too far away from the vehicle), the UID shuts down (Power Down Mode) again and waits for the next LF Data. The vehicle is still locked. A Person with the UID is leaving the vehicle. If he activates an electronic device to lock the car at the door handle, the complete Keyless Exit Protocol is started:



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If the magnetic field strength is fitting to a certain RSSI value limit pattern, the doors will lock. The additional LF communication guarantees the functionality, that only the valid key OUTSIDE the vehicle authenticates the system lock the car passively. If the UID is left inside the car, the car won't lock. If the magnetic field strength that is sent to the ECU to judge is not high enough (e.g. the UID is too far away from the vehicle), the UID shuts down (Power Down Mode) again and waits for the next LF Data. The vehicle is still open.

- Passive Start

A Person with the UID inside of the vehicle is pressing the Start-Stop-Switch. The Start-Stop-Switch activates the complete Keyless Start protocol: The interior antenna is transmitting the LF Data and a carrier signal, which can be recognized and judged by quantity (RSSI-measurement) by the UID. The other two interior antennas IN1 and IN2 transmit two additional carrier signals sequential. If the magnetic field strength of one of these transmits is high enough (a certain border is reached) then the UID authenticates the system to start the vehicle.

If the magnetic field strength of all antenna transmits are too low (the field strength border is not reached, maybe the UID is laying outside or is held 10cm outside the vehicle) the car won't start.