

1. Constitution of the Radio Frequency Keyless Entry System with Door Lock Controller for vehicle.

The radio frequency keyless entry is a system that it controls locking and unlocking the door by wireless remote controller. This system consists of two components. The TRANSMITTER is a device that transmits the signal when the button is pressed. The transmission signal consists of several synchronous codes, unique identification code, security code and function code. The RECEIVER is fixed inside the vehicle. It works intermittently to prevent the battery exhaustion. When the receiver detects the synchronous code, it runs continuously to receive the signals completely. After receiveing the signal, the receiver decides which operation will be performed. The user can select the following operations by pressing the button of the remote transmitter.

OPERATION	ACTION
LOCK	Lock the door
UNLOCK	unlock the door (the driver side first, then all doors)
PANIC	The horn is beeped, and the headlight and flasher are blinked

This receiver also controls wired operation. It is available to control the door lock status by using the silcon switch or the remote door control switch (both driver's and passenger's side).

Transmitter
 $f = 313.85\text{MHz}$

4. Specification

4.1 CPU

Type	MPD789025 (8bit) Manufacturer: NEC
ROM	12K bytes
RAM	512 bytes
EEPROM	2K bytes
Clock frequency	5.0MHz
Clock frequency generation	Ceramic resonator
Package	44pin QFP

4.2 RF block

Local clock frequency	324.55MHz
Frequency generation	Crystal resonator
Modulation	FSK
Bandwidth	$\pm 200\text{KHz}$
Carrier Detect Sensitivity	58 dBuVemf

4.3 Others

Dimension	62 mm \times 60 mm \times 30 mm
Weight	80 g
Battery	Car Battery (DC 12V)
Operation Voltage	DC 12V, 10mA
Operation temperature	-30°C ~ +80°C

5. Features

5.1 Integrated controller

The controller works both wireless and wired operation.

You can use it remotely as the receiver of the keyless entry system. You can operate the door lock remotely using the remote transmitter. It is also available to release the boot.

When you turn the door lock switch, the controller works as the door lock controller. The controller monitors the switch related to the door lock. In case of the status of the switch changed, the controller will detect and output the signal to the door lock actuator.

5.2 Battery saving

The receiver works intermittently to reduce the battery consumption. The microcomputer mounted on the receiver controls the power supply for the RF circuit. In case of the microcomputer detects the wake-up signal during the power supplied, the microcomputer continue supplying the power until the data frame will be received.