

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)
BOOT RELEASE	Release the boot
PANIC	Beep the horn and flush the small light. (it continues 30 seconds)

This receiver also controls wired operation. When the key is in the driver's side key cylinder, all doors will Unlock if the key is turned to UNLOCK and hold more than one second. In case of the operation time is shorter, the only diver's side door is mechanically unlocked. It is also available to control the door lock status by using the remote door control switch (both driver's and passenger's side).

Transmitter
 $f = 313.85\text{MHz}$

4. Specification

4.1 CPU

Type	uPD 789104A(8bit) Manufacturer: NEC
ROM	8K bytes
RAM	256bytes
Clock frequency	5.00MHz
Clock frequency generation	CERAMIC resonator
Package	30pin SSOP

4.2 RF block

Local clock frequency	324.55MHz
Frequency generation	Crystal resonator
Modulation	Single Superheterodyne
Bandwidth	$\pm 200\text{KHz}$
Sensitivity	30dBuV

4.3 Others

Dimension	50 mm $\times$ 40 mm $\times$ 25 mm
Weight	25 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 continues supplying the power until the data frame will be received.

6.5 Connector

This is the pin assignment of the connector.

No.	I/O	Assignment	Memorandum
1	INPUT	Battery	12V
2		(not used)	
3	INPUT	Ignition switch	Active High
4	OUTPUT	Serial output	
5		Ground	GND