OMRON
AUTOMOTIVE
ELECTRONICS
KOREA

# OKA - 770R

RECEIVER, RF Keyless Entry System

## FCC Operation Statement

**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**
**(2) This device must accept any interference received, including interference that may cause undesired operation.**

## FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

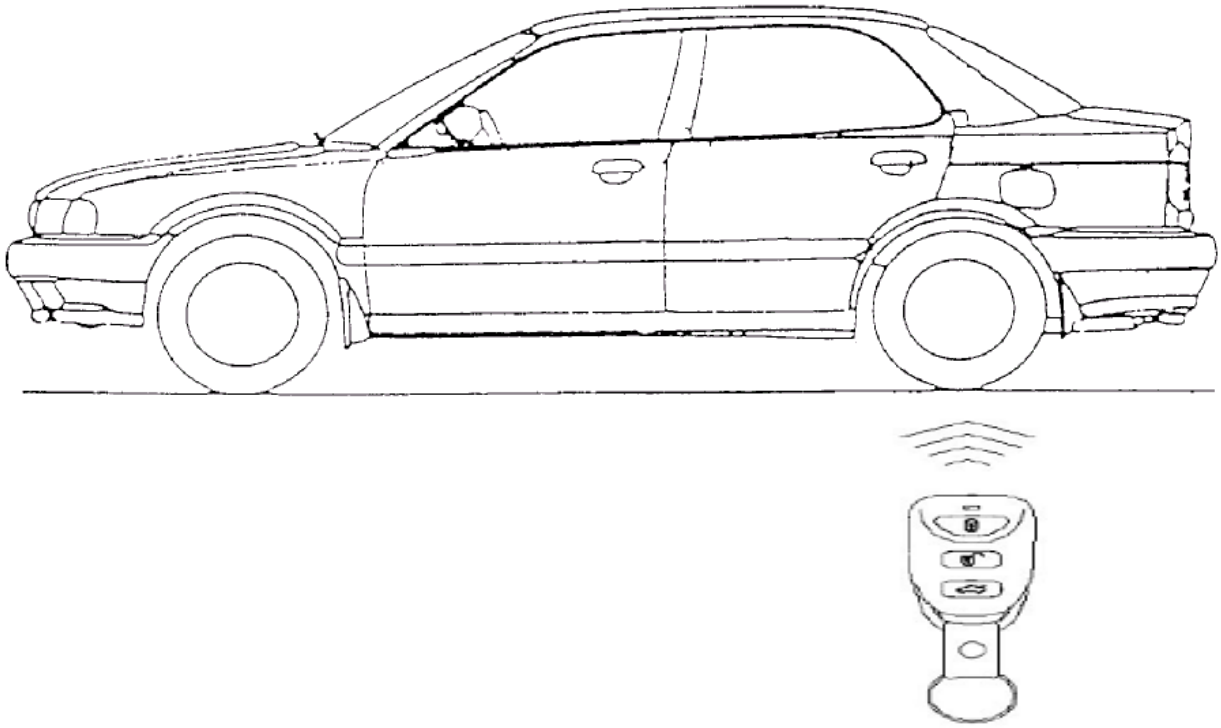
## Caution !

Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

# 1. Constitution of the Radio Frequency Keyless Entry System for vehicle

The radio frequency keyless entry is a system that it controllers locking and unlocking the door by wireless remote controller. This system consists of three 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 receiving 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 |
| TRUNK | open the trunk |
| PANIC | alarm the horn |



Transmitter
Freq : 313.85MHz

# 2. User's manual (provisionally)

## TRANSMITTER

You can lock and unlock your vehicle with the remote transmitter.


### LOCK

When you push the LOCK button, all the doors will lock.

You cannot lock any of the doors with the remote transmitter if any door is open or the key is the ignition switch.

### UNLOCK

When you push the UNLOCK button, all the doors will unlock.

You cannot unlock any of the doors with the remote transmitter if any door is open or the key is in the ignition switch.

### TRUNK

When you push the TRUNK button, TRUNK will open.

### PANIC

When you push the PANIC button, Horn will alarm.

# 3. Block diagram

This is the block diagram concerning to the receiver.

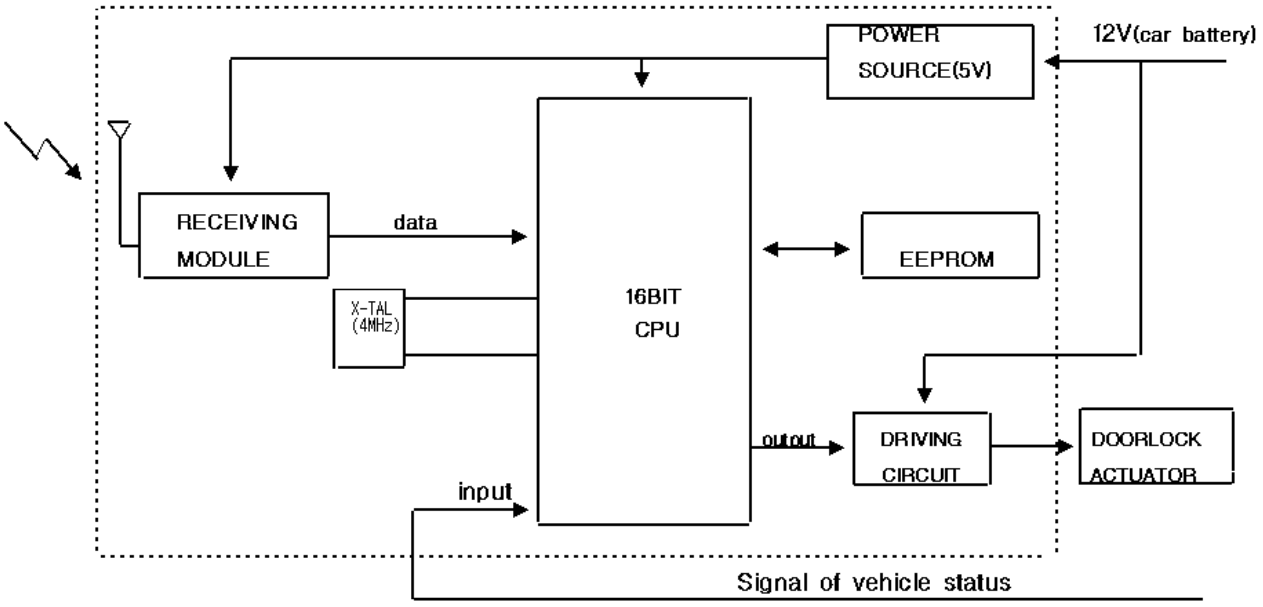



figure 3.1 block diagram of the receiver

# 4. Specification

4.1 CPU

| | |
|---|---|
| Type | MC9S12XD128MAL<br>Manufacturer : FREESCALE |
| ROM | 128Kbytes |
| RAM | 8Kbytes |
| Clock frequency | 4MHz |
| Clock frequency generation | Crystal resonator |
| Package | 112pin QFP |

4.2 RF Receiver Module

| | |
|---|---|
| Type | G8X-21RX-KO1<br>Manufacturer : OMRON OKA |
| Local clock frequency | 313.85MHz |
| Frequency generation | Crystal resonator |
| Modulation Scheme | FSK |
| Bandwidth | ±200KHz |
| Carrier Detect Sensitivity | 11dBuVemf |

4.3 Others

| | |
|---|---|
| Dimension | 150mm×100mm×32mm |
| Weigh | 178g |
| Battery | CAR Battery(DC 12V) |
| Operation Voltage, Current | DC12V,50mA (4mA |
| Operation Temperature | -30℃～+80℃ |

# 5. Features

5.1 Door lock control

The LOCK relay in the receiver drives the door lock actuators to "LOCK"-side when LOCK button of transmitter was pressed. The UNLOCK relay in the receiver drives the door lock actuators to "UNLOCK"-side when UNLOCK button of transmitter was pressed. These facility doesn't work if the key is inserted the key clinder or the door is open.

5.2 Battery saving

Because of the power source of the receiver is car Battery, it is very important problem to minimize a power consumption. The receiver's CPU works intermittently to prevent the battery exhaustion.

# 6. Derivatives

OKA-315R is an integrated controller for a car body control, includes the keyless entry receiver. The integrated. controller consists of the multiple control functions as follows, centralized door lock, turn-signal lamp, room-lamp, intermitted wiper, power window timer, ignition key illumination, warning buzzer and so on.

## 7.4 Connector

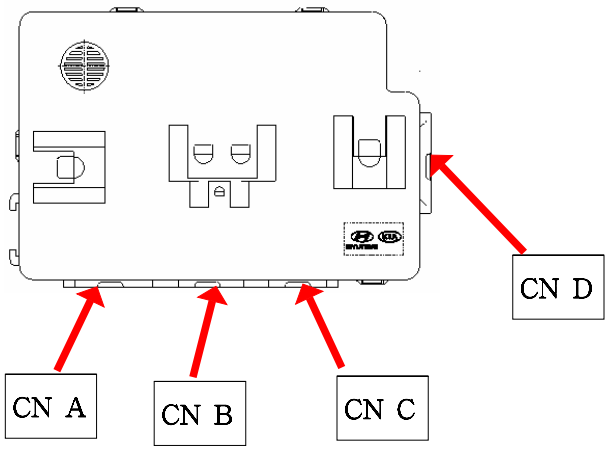



figure 7.4 the shape of the connector

CONNECTOR PIN

| CONNECTOR"A" | | CONNECTOR"B" | | CONNECTOR"C" | | | CONNECTOR"D" |
|---|---|---|---|---|---|---|---|
| A01 | A_B+ | B01 | L_DRVDRKeyLockSW | C01 | L_AutoLightSW | D01 | O_RoomLamp[FOOT LAMP] |
| A02 | L_IGN1 | B02 | L_ASTDRKeyUnlockSW | C02 | L_FrontDeicerSW | D02 | O_PwdwRly |
| A03 | STOP LAMP SW | B03 | L_TrunkKeyUnlockSW | C03 | AutoLight(GND) | D03 | O_LockRly |
| A04 | D" INHIBIT SW | B04 | L_TailSW | C04 | A_WiperIntVolumeSW | D04 | O_Fr FOG Rly |
| A05 | ALT "L" | B05 | L_HMC/KMC PIN CODE | C05 | CAN (HI) | D05 | O_KeyHoleIllumi |
| A06 | L_KeyInSW | B06 | AV_ TAIL | C06 | KEY SOLENOID | D06 | O_TailLampRly[실내 + 실외] |
| A07 | L_WasherSW | B07 | KEY INTER LOCK SW | C07 | O_HazardRly | D07 | O_TRUNK RLE Rly |
| A08 | L_ASTDRSW | B08 | L_RearFogSW | C08 | O_HeadLampRly | D08 | O_HEAD LAMP Rly |
| A09 | L_ASTDRUnlockSW | B09 | L_HeadLampSW | C09 | L_RearDefoggerSW | D09 | |
| A10 | L_RearDRUnlockSW[LH] | B10 | L_DRVDRKeyUnlockSW | C10 | A_AutoLightSig | D10 | O_DRV SeatBeltIND |
| A11 | L_PwdwDRLockSW | B11 | L_TrunkOpenSW | C11 | AutoLight(POWER) | D11 | O_SECURITY IND |
| A12 | L_IGN2 | B12 | L_DRL ACTIVATION | C12 | F_SpeedSNSR | D12 | O_START INH Rly |
| A13 | L_ACC | B13 | L_HoodSW | C13 | PAB SIGNAL | D13 | O_UNLockRly |
| A14 | P" INHIBIT SW | B14 | L_TrunkReleaseSW | C14 | HI SCAN | D14 | O_DRUNLockRly[DEAD LOCK] |
| A15 | N" INHIBIT SW | B15 | L_DEAD LOCK PIN CODE | C15 | CAN (LOW) | D15 | O_SafetyPwdwECUP[HIGH] |
| A16 | GND(LOGIC) | B16 | MTS Rx | C16 | O_SafetyPwdwECUP[LOW] | D16 | O_DefoggerRly |
| A17 | L_MistSW | B17 | MTS Tx(DOM) | C17 | ATM SOLENOID | D17 | O_RearFogRly |
| A18 | L_INT SW | B18 | L_CrushInput | C18 | GND(POWER) | D18 | O_FR DEICER Rly |
| A19 | CODE SAVE UNIT | B19 | L_SeatBeltSW | | | D19 | O_HornRly |
| A20 | L_DRVDRSW | B20 | L_FrontFogSW | | | D20 | |
| A21 | L_DRVDRUnlockSW | | | | | D21 | O_TAIL LAMP RLY[DRL사양] |
| A22 | L_4DRSW | | | | | D22 | O_AST SeatBeltIND |
| A23 | L_RearDRUnlockSW[RH] | | | | | D23 | |
| A24 | L_PwdwDRUnlockSW | | | | | D24 | |

This is the pin assignment of the connector