OKA- 330T

Transmitter, RF Keyless Entry System

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

The radio frequency keyless entry is a system that it controls locking and unlocking the door and the trunk and the panic 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 and crc 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
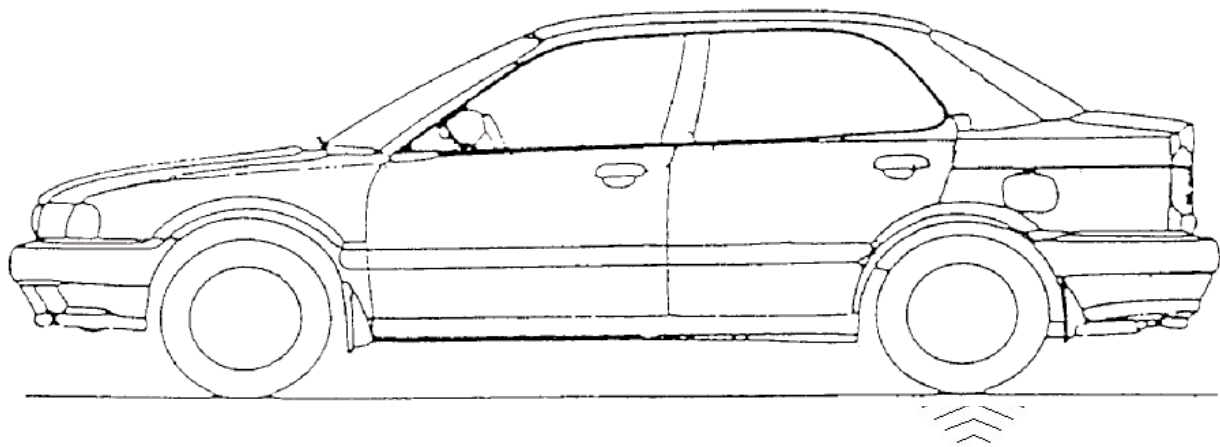
Transmitter
f = 313.85MHz

2. User's manual (provisionally)

REMOTE 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 continuously the TRUNK button during 0.5s, TRUNK will open.

PANIC
When you push continuously the PANIC button during 0.5s, horn will alarm.

3. Block diagram

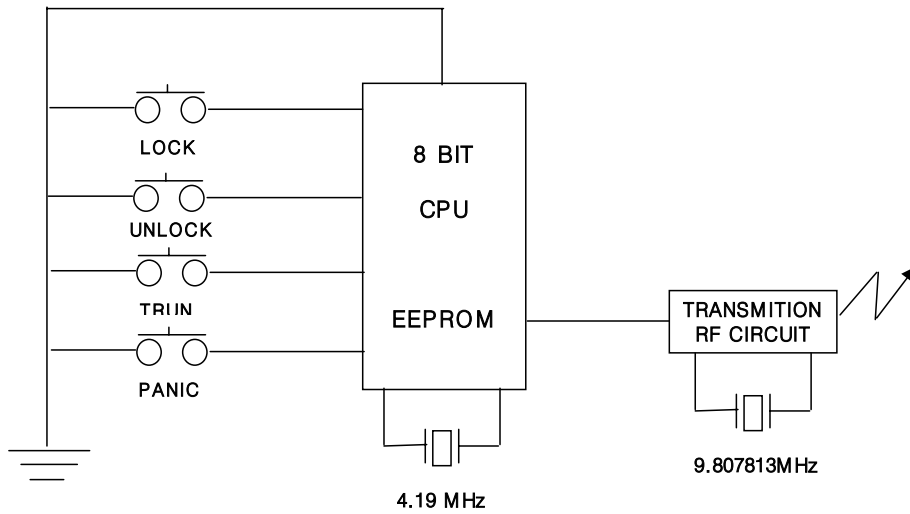This is block diagram concerning to the transmitter

figure 3.1 block diagram of the transmitter

4. Specification

4.1 CPU

Type	uPD789860-xxx(8bit)
	Manufacturer : NEC Corporation
ROM	4 Kbytes
RAM	128 bytes
EEPROM	32 bytes
Clock frequency	4.19MHz
Clock frequency generation	X-TAL
Package	20pin SSOP

4.2 RF block

Carrer frequency	313.85MHz
Frequency generation	X-TAL
Modulation	FSK
Bit transmission rate	500bps or 1000bps
Bandwidth	10KHz
RF output power (field strength)	4000μ V/m at 3m

4.3 Others

Dimension	62.0mm×33.7mm×14.3mm
Weigh	21.5g
Battery	Lithium cell (CR2032)
	Manufacturer : PANASONIC Battery corporation etc.
Operation Voltage	DC3V
Operation Temperature	-20℃～+60℃

5.Features

5.1 Transmission frame

The transmission begins immediately in case of LOCK and UNLOCK, TRUNK and PANIC is begun after 0.5s.

The transmission frame consists of the synchronous frame and the data frame. The synchronous frame has 320bit synchronous codes that it will be used for the receiver to wake up. The data frame consists of 24bit length identification code, 16bit security code and 4bit function code and 8bit crc code. 16million different identification codes are available.

The security code is always changed in case of any of the buttons is pressed. The transmission time is typically 300 milliseconds.

5.2 Battery saving

To prevent the battery exhaustion , the micro-computer of the transmitter is usually inactive. When the button will be pressed, the micro-computer wakes up immediately and judges which button is pressing. Then the micro-computer constructs the transmission frame and radiates it from the antenna .After transmitting, the micro-computer switches stand-by mode by itself.