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# G8D-344H-3B

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Receiver, RF Keyless Entry System

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# 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 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                                                             |
|---------------|--------------------------------------------------------------------|
| <b>LOCK</b>   | Lock the door                                                      |
| <b>UNLOCK</b> | Unlock the door (the driver side first, then all doors)            |
| <b>PANIC</b>  | 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 driver'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

$f = 313.85\text{MHz}$

## 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 in the ignition switch.

### UNLOCK

When you push the UNLOCK button ones, only the driver's door unlocks. The remaining door unlock when you push the button a second time. If you unlock the doors with the remote transmitter, but do not open any of the doors within 30 seconds, the doors will automatically relock.

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

### PANIC MODE

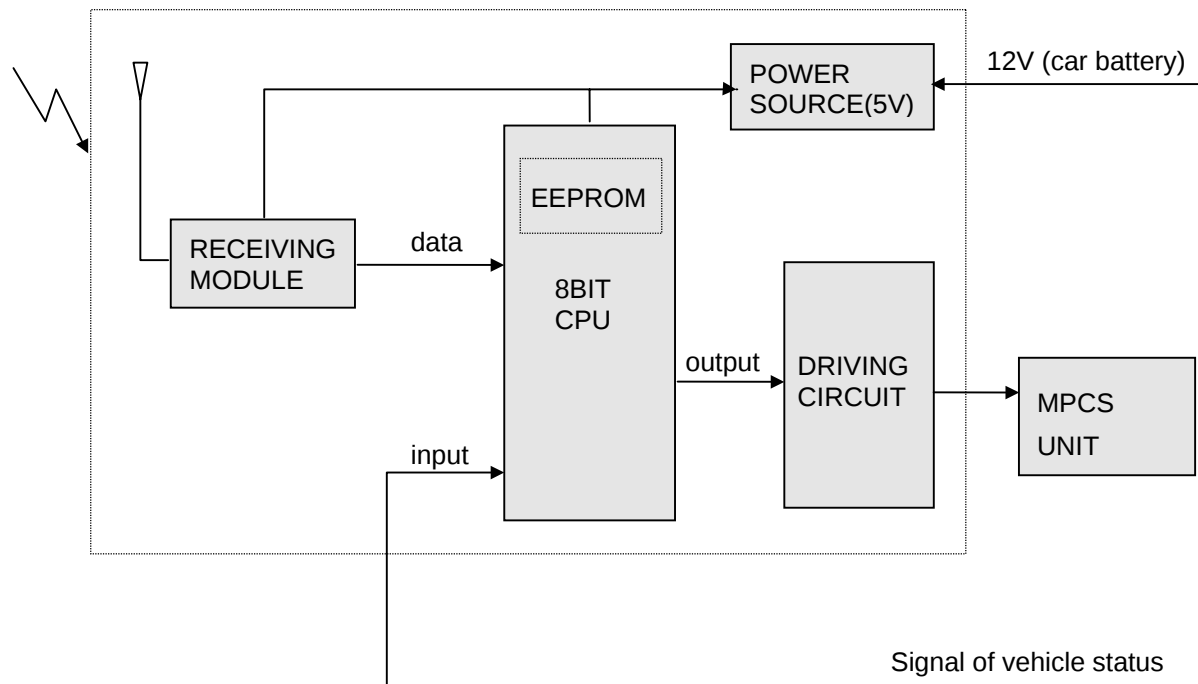
Panic mode allows you to remotely sound your vehicle's horn to attract attention. To activate this mode, press and hold the PANC button for about one second. Your vehicle's horn will beep for about 30 seconds.

To cancel panic mode before 30 seconds, press any button on the remote transmitter. You can also turn the ignition switch to ON.

Panic mode will not activate if the ignition switch is in ON.

### 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                       | uPD 789104A(8bit)<br>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            | FSK               |
| Bandwidth             | ± 200KHz          |
| Sensitivity           | 30dBuV            |

### 4.3 Others

|                       |                       |
|-----------------------|-----------------------|
| Dimension             | 50 mm × 40 mm × 25 mm |
| Weight                | 25 g                  |
| Battery               | Car Battery (DC 12V)  |
| Operation Voltage     | DC 12V, 10mA          |
| Operation temperature | -30 ~ +80             |

## 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.

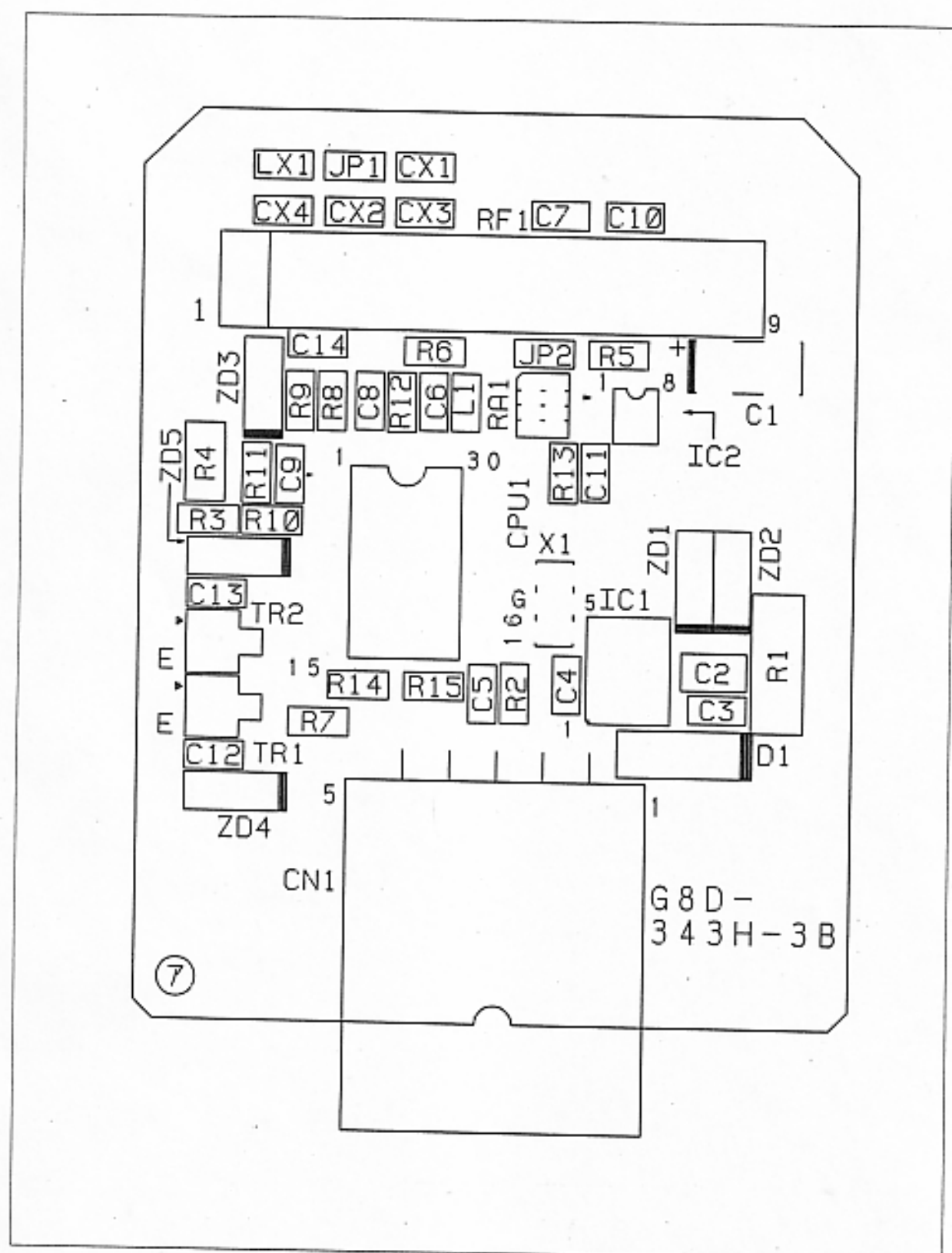
/ SIGNAL FORM /

|                     |                |                                                          |
|---------------------|----------------|----------------------------------------------------------|
| Synchronous<br>code | Header<br>code | Identification<br>code<br>security code<br>function code |
| (324bit)            | (4bit)         | (56bit)                                                  |

### 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.

## 6.2 Parts layout



### 6.3 Pattern layout

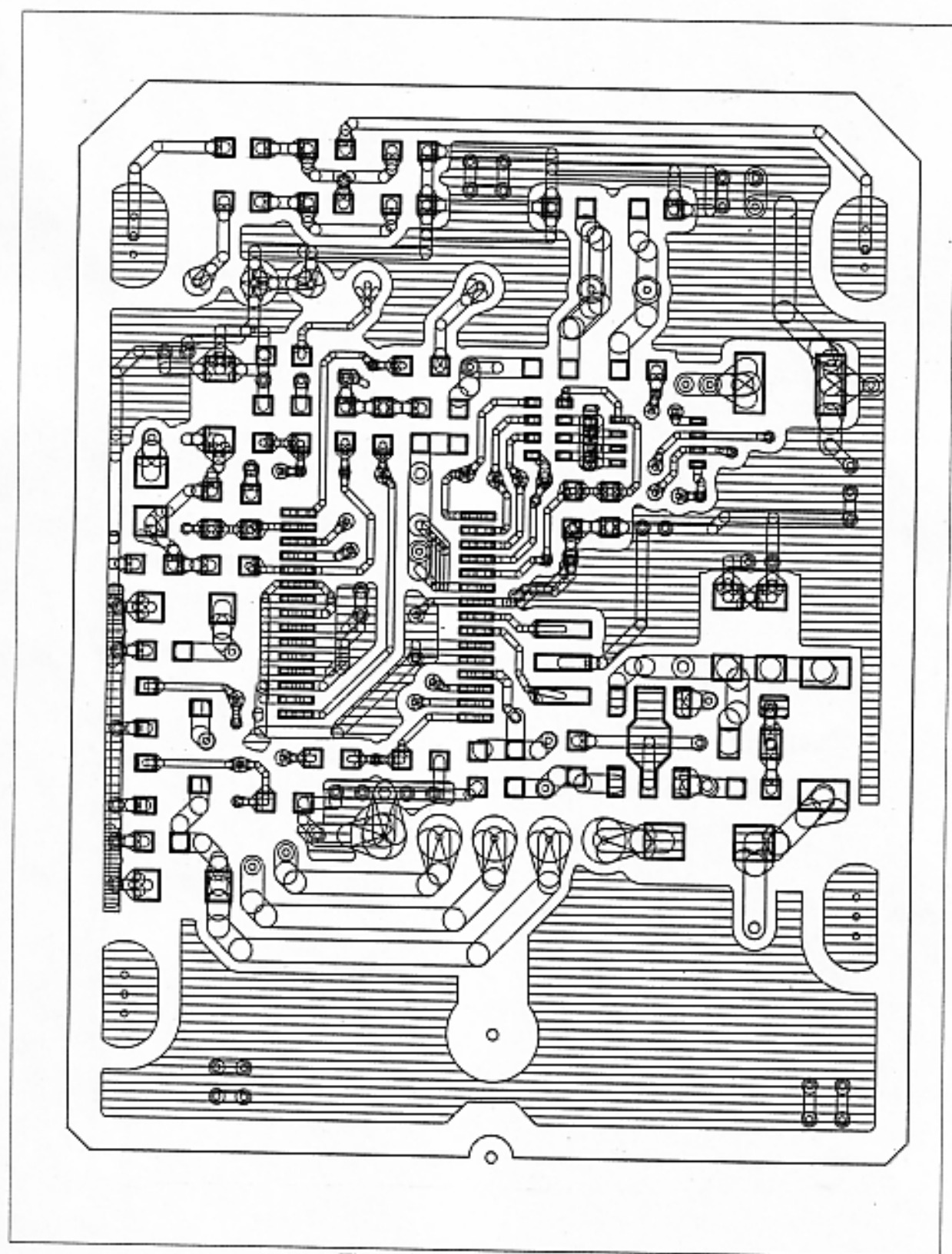


Figure 6.5 Pattern layout (front)

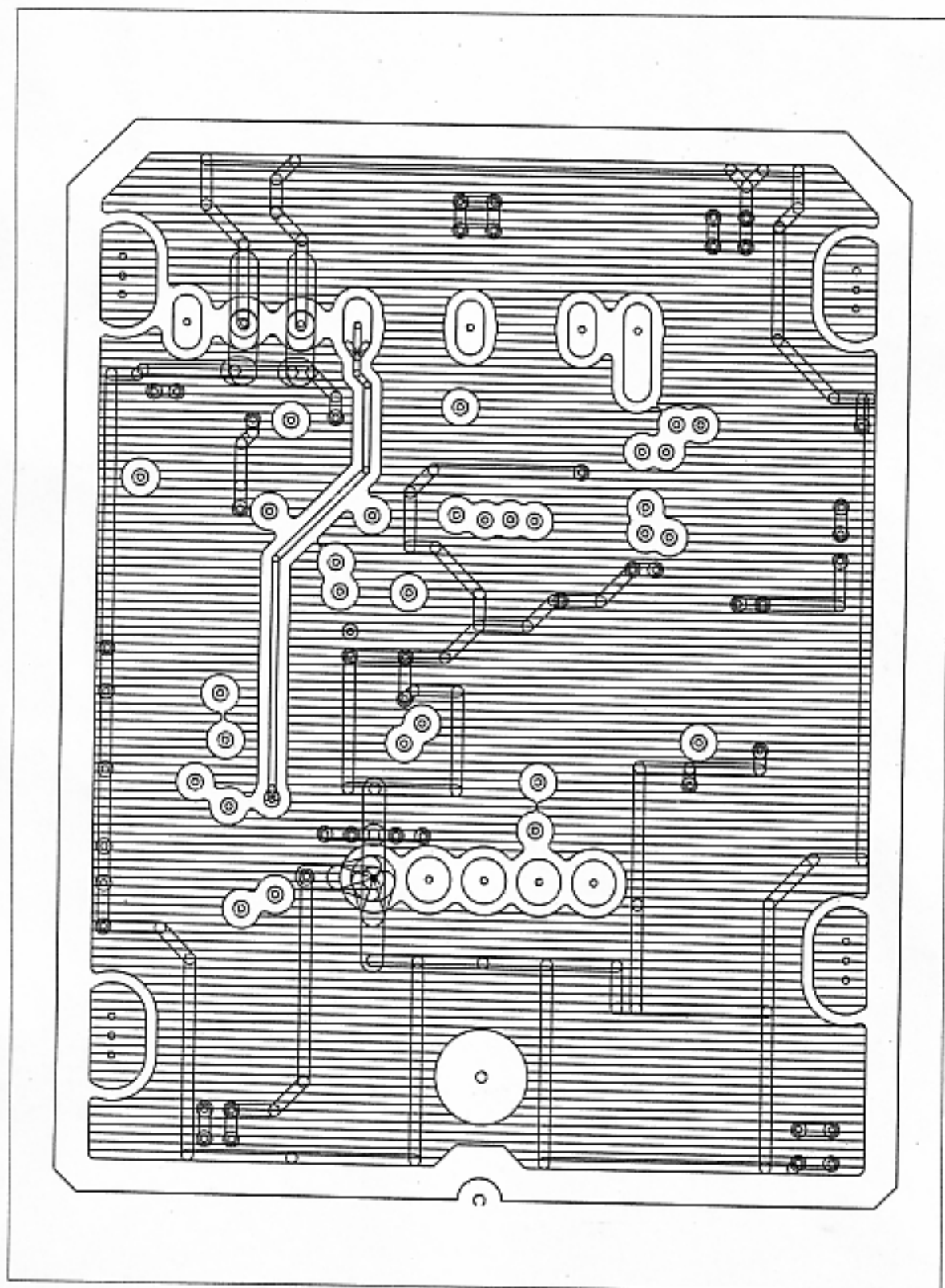


Figure 6.6 pattern layout (back)

## 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         |