# 智慧型地震防災裝置(商品)

緩慢停靠電梯、關閉瓦斯　　歡迎廠商訂購

地震發生

↓

給電梯停車訊號

↓

暫時切斷瓦斯及電力

↓

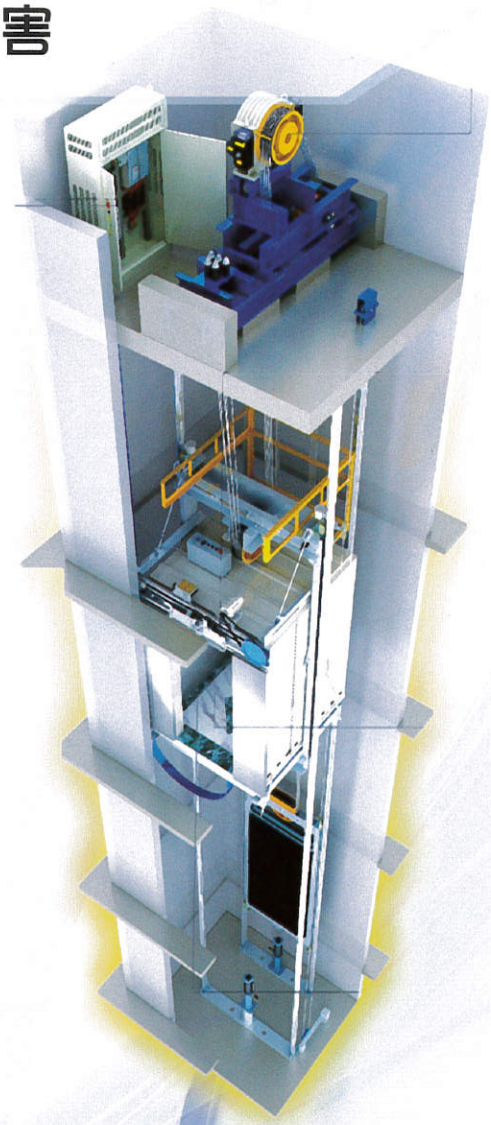
播放警示語音

↓

輔助照明光源

- 24 小時偵測 內建不斷電系統
- 地震發生即時反饋訊號給電梯
- 停靠最近樓層緊急疏散乘客
- 降低地震災害

億光大樓安裝實績



中華民國發明專利： 發明第 I446300 號

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行動電話：0932-340719

# 智慧型地震防災機制處理器

## Smart Earthquake Sensor

### 功能介紹

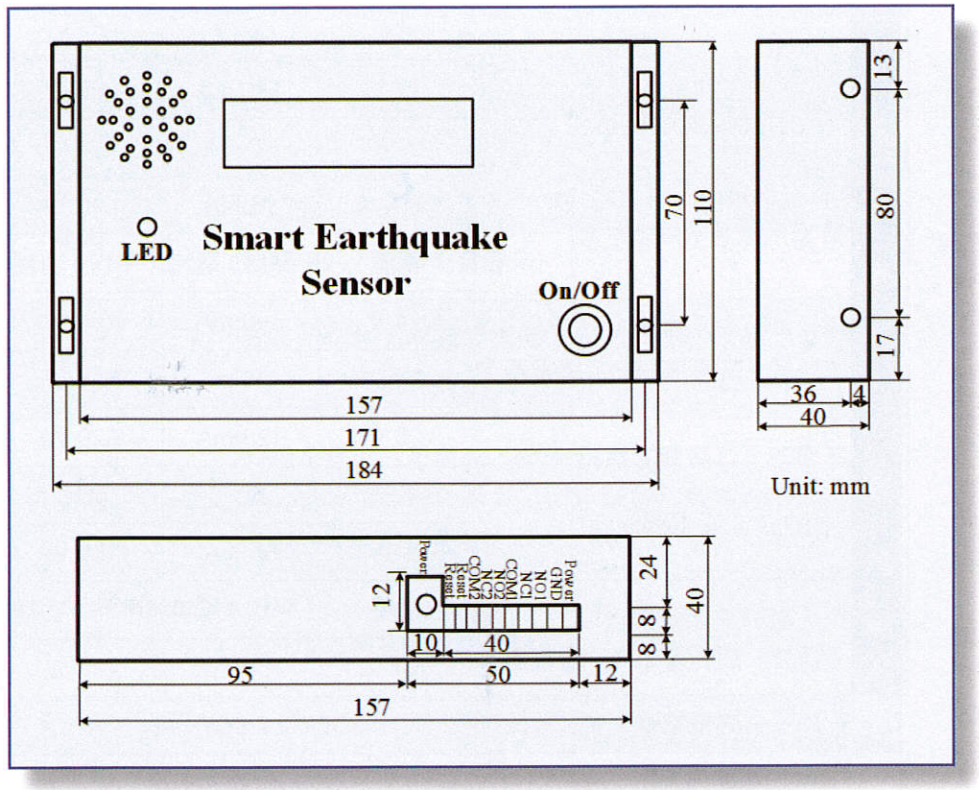
當地震震度超過預設加速度值 (gal)，此智慧型地震防災機制處理器會立即作動，將訊號反饋給電梯，進行最近樓層停機疏散，確保乘客安全與保護電梯不受到進一步損害。其設計可大幅節省以往機械式安裝水平校準時間，亦可配合工地需求設定觸發加速度值，並排除因其他機械性或正常性的振動而誤動作。本產品可延伸應用於工業設備感知地震振幅，進行設備之運轉停止與警報控制，例如：瓦斯管線、半導體機台、耗電之高功率設備· · · 等，防止災害發生，保護生命財產安全。

## 特　色

1. 安裝簡易，安置定位開機後，系統將自動校準。
2. 液晶面板顯示即時三軸向與合成向量地震波加速度值 (gal)。
3. 液晶面板顯示即時地震震度。
   ( 顯示幾級地震，提供保全人員辨識 )
4. 內建高亮度發光二極體 (LED)。( 逃生時夜間照明 )
5. 內建充電電池，具不斷電功能。( 地震停電時，不受影響 )
6. 語音警示撥報 ( 中文。其他：英文…等 )
7. 自動濾除非地震之高頻振動。
8. 兩段式地震觸發設定。
9. 中震 (60gal) 觸發後，30 秒自動復歸。強震 (120gal) 觸發後，手動復歸。( 可依客戶需求調整 )
10. 國家地震中心校驗。
11. 中華民國發明專利：發明第 I446300 號。
12. 通過 CE 認證。
13. 通過低溫 (-10℃ )、高溫 (60℃ )、鹽霧 (35℃ ) 測試。



## 外　觀 ( 單位：釐米 )



## 規　格

| | | | | |
|---|---|---|---|---|
| 使用外部電源 | 標準電壓 | DC 24V | | |
| | 適用電壓範圍 | DC 14 V ~ DC 25 V | | |
| | 待機 | 電壓 | 電流 | 功耗 |
| | | 14 V | 120 mA | 1.68 W |
| | | 24 V | 80 mA | 1.92 W |
| | | 25 V | 76 mA | 1.90 W |
| | 動作（語音、高亮度 LED、繼電器） | 電壓 | （平均）電流 | （平均）功耗 |
| | | 14 V | 190 mA | 2.66 W |
| | | 24 V | 135 mA | 3.24 W |
| | | 25 V | 128 mA | 3.20 W |
| 使用內建電池 | 待機 | 電壓 | 電流 | 功耗 |
| | | 8.4 V | 65 mA | 0.55 W |
| | 動作（語音、高亮度 LED、繼電器） | 電壓 | （平均）電流 | （平均）功耗 |
| | | 8.4 V | 160 mA | 1.34 W |
| 充電電池 | | 8.4 V；850 mAh | | |
| 聲音大小 | | 75 dB @ 30cm | | |
| 尺寸（長＊寬＊高） | | 18.4 cm*11.0 cm*4.0 cm | | |
| 重量 | | 600 g | | |
| 適用溫度 | | -10℃ ~ 60℃ | | |



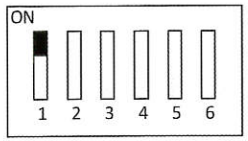
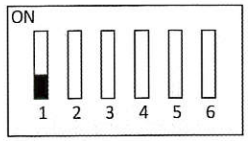
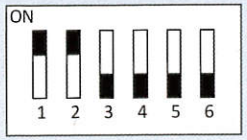
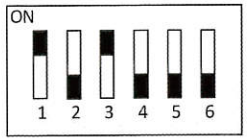
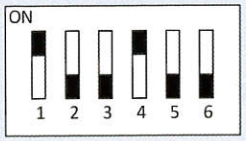
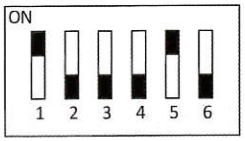
## 地震震度分級表

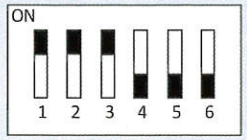
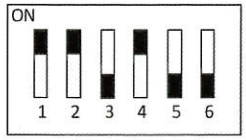
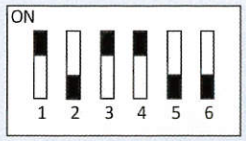
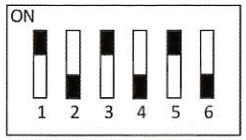
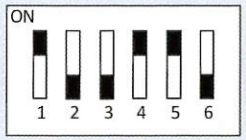
來源：中央氣象局

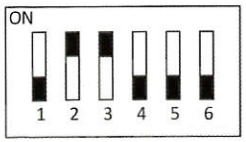
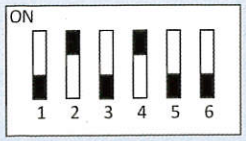
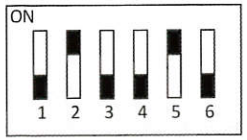
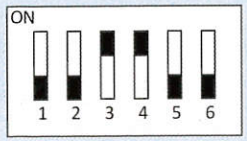
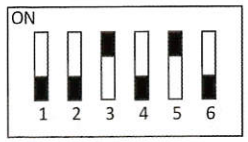
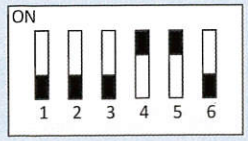
| 震度分級 | | 地動加速度 (cm/s², gal) | 人的感受 | 屋內情形 |
|---|---|---|---|---|
| 0 | 無感 | 0.8 以下 | 人無感覺。 | |
| 1 | 微震 | 0.8~2.5 | 人靜止時可感覺微小搖晃。 | |
| 2 | 輕震 | 2.5~8.0 | 大多數的人可感到搖晃，睡眠中的人有部分會醒來。 | 電燈等懸掛物有小搖晃。 |
| 3 | 弱震 | 8~25 | 幾乎所有的人都感覺搖晃，有的人會有恐懼感。 | 房屋震動，碗盤門窗發出聲音，懸掛物搖擺。 |
| 4 | 中震 | 25~80 | 有相當程度的恐懼感，部分的人會尋求躲避的地方，睡眠中的人幾乎都會驚醒。 | 房屋搖動甚烈，底座不穩物品傾倒，較重傢俱移動，可能有輕微災害。 |
| 5 | 強震 | 80~250 | 大多數人會感到驚嚇恐慌。 | 部分牆壁產生裂痕，重傢俱可能翻倒。 |
| 6 | 烈震 | 250~400 | 搖晃劇烈以致站立困難。 | 部分建築物受損，重傢俱翻倒，門窗扭曲變形。 |
| 7 | 劇震 | 400 以上 | 搖晃劇烈以致無法依意志行動。 | 部分建築物受損嚴重或倒塌，幾乎所有傢俱都大幅移位或摔落地面。 |

## 指撥開關功能設定

選取 2 種加速達值。
較小的為第一段，較大的為第二段。

| 腳位 | 圖示 | 功能 |
|---|---|---|
| PIN 1 |  | 設定模式（觸發振幅）<br>設定第一段與第二段觸發加速度值 |
| |  | 正常運作模式<br>（一般使用時，請設定此模式） |
| **第一步驟：設定模式** | | |
| PIN 1<br>PIN 2 |  | 設定<br>第一段觸發加速度值：60 gal |
| PIN 1<br>PIN 3 |  | 設定<br>第一段觸發加速度值：80 gal |
| PIN 1<br>PIN 4 |  | 設定<br>第一段觸發加速度值：120 gal |
| PIN 1<br>PIN 5 |  | 設定<br>第一段觸發加速度值：250 gal |

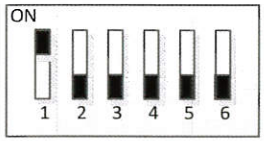
| | | |
|---|---|---|
| PIN 1<br>PIN 2<br>PIN 3 |  | 設定<br>第一段觸發加速度值：60 gal<br>第二段觸發加速度值：80 gal |
| PIN 1<br>PIN 2<br>PIN 4 |  | 設定<br>第一段觸發加速度值：60 gal<br>第二段觸發加速度值：120 gal |
| PIN 1<br>PIN 2<br>PIN 5 | | 設定<br>第一段觸發加速度值：60 gal<br>第二段觸發加速度值：250 gal |
| PIN 1<br>PIN 3<br>PIN 4 |  | 設定<br>第一段觸發加速度值：80 gal<br>第二段觸發加速度值：120 gal |
| PIN 1<br>PIN 3<br>PIN 5 |  | 設定<br>第一段觸發加速度值：80 gal<br>第二段觸發加速度值：250 gal |
| PIN 1<br>PIN 4<br>PIN 5 |  | 設定<br>第一段觸發加速度值：120 gal<br>第二段觸發加速度值：250 gal |

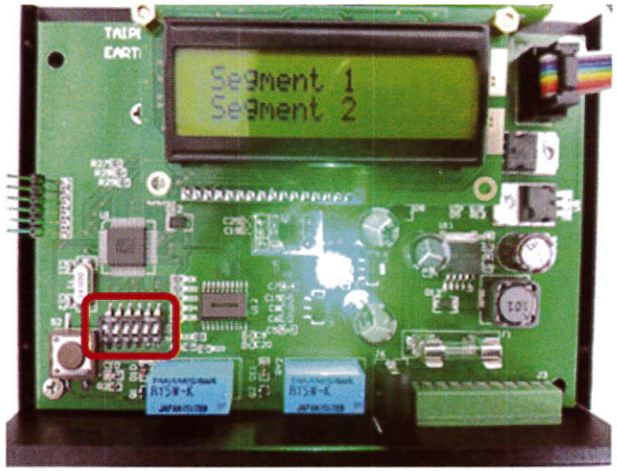
| 第二步驟：正常運作模式（將 PIN 1 往下扳） | | |
|---|---|---|
| PIN 2<br>PIN 3 |  | 正常運作<br>第一段觸發加速度值：60 gal<br>第二段觸發加速度值：80 gal |
| PIN 2<br>PIN 4 |  | 正常運作<br>第一段觸發加速度值：60 gal<br>第二段觸發加速度值：120 gal |
| PIN 2<br>PIN 5 |  | 正常運作<br>第一段觸發加速度值：60 gal<br>第二段觸發加速度值：250 gal |
| PIN 3<br>PIN 4 |  | 正常運作<br>第一段觸發加速度值：80 gal<br>第二段觸發加速度值：120 gal |
| PIN 3<br>PIN 5 |  | 正常運作<br>第一段觸發加速度值：80 gal<br>第二段觸發加速度值：250 gal |
| PIN 4<br>PIN 5 |  | 正常運作<br>第一段觸發加速度值：120 gal<br>第二段觸發加速度值：250 gal |



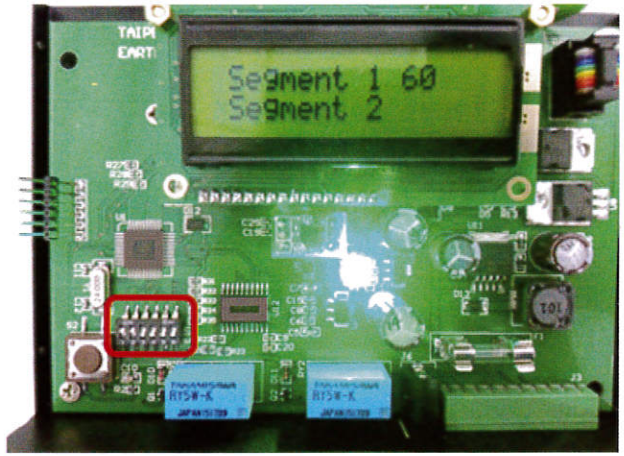
## 設定範例

### 步驟一：設定模式

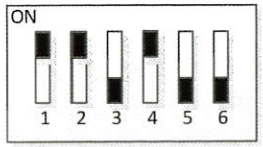


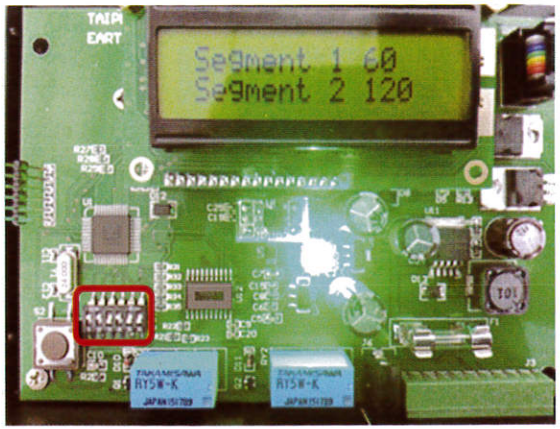




### 步驟二：設定第一段加速度值為 60gal

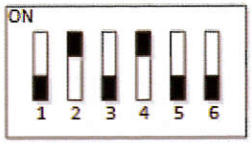


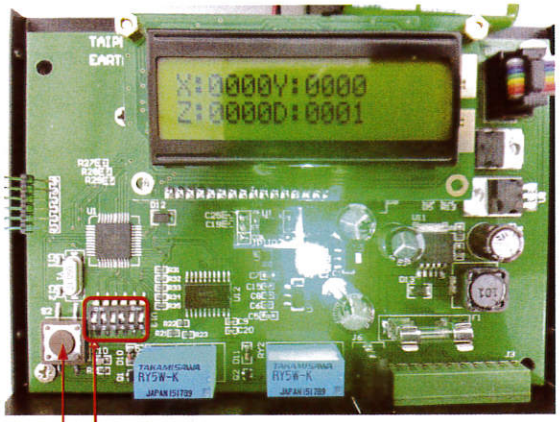
步驟三：設定第二段加速度值為 120gal




步驟四：回到正常運作模式　第一段觸發加速度值：60 gal
第二段觸發加速度值：120 gal




PIN 1 要往下扳：正常模式
可以按重置鍵

## Function

Once an acceleration amplitude exceeds a pre-set value (gal), it will immediately activate a signal to an elevator. The elevator moves to the nearest floor slowly and evacuation people to prevent injure. Compared to conventional mechanical earthquake sensor, it saves lots of time from vertical and horizontal calibrations. Moreover, it can be trigged at different pre-setting acceleration value. Furthermore, the product can be attached to industrial equipment (e.g. gas pipeline, semiconductor machine, and elevator) for safety.

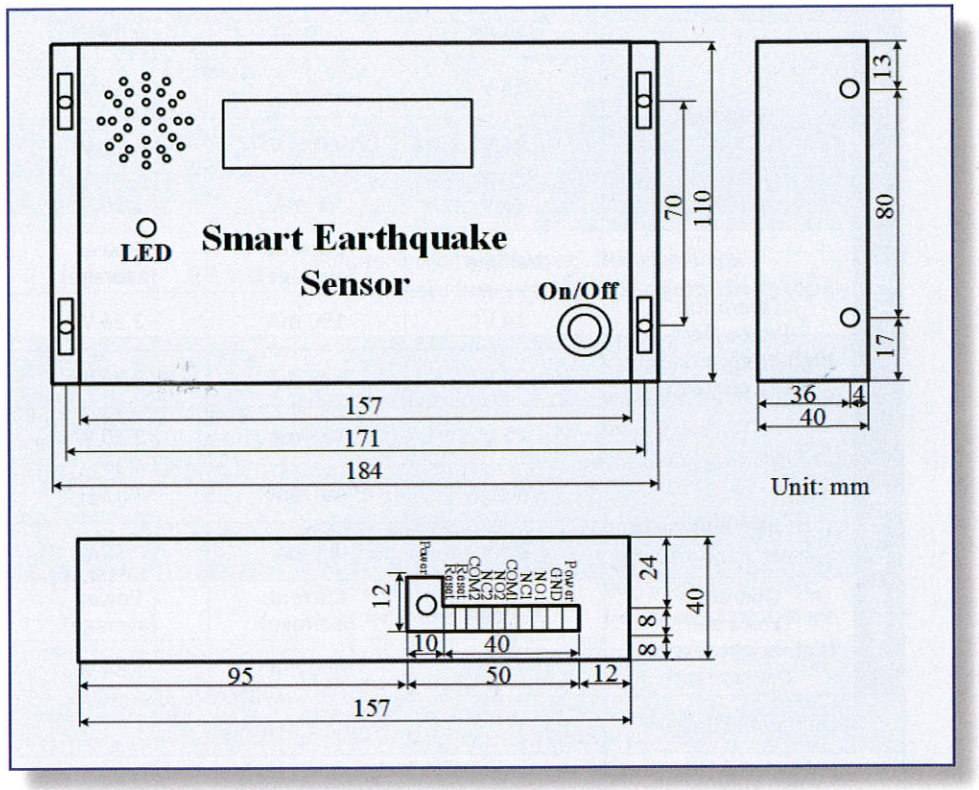
## Feature

1. Easy to install: the product will calibrate itself automatically.
2. LCD Display real-time 3-axis seismic acceleration value (gal).
3. LCD Display real-time earthquake (seismic) intensity, providing information to us (ex: security guards, researcher ...).
4. Built-in high brightness LED. (Lighting for people evacuating at night while earthquake happen)
5. Built-in rechargeable battery, with UPS function. (Backup electricity for power failure due to earthquake)
6. Voice alert (Chinese, option: English...).
7. Automatically filter out high-frequency non-seismic vibration.
8. Two-stage acceleration trigger value setting.
9. Equipped with auto reset (30 sec after 60-gal moderate earthquake triggered) and manual remote reset function (Strong earthquake; > 120gal).
10. Calibration by National Center for Research on Earthquake Engineering (NCREE).
11. Republic of China, Invention Patent (No: I446300).
12. With CE certification.
13. Pass -10°C low temperature, 60°C high temperature, and 35°C salt environment testing.



## Dimension

(Unit: mm)



## Specification

| | | | | |
|---|---|---|---|---|
| External Power Supply | Standard Voltage | DC 24V | | |
| | Voltage Range | DC 14 V ~ DC 25 V | | |
| | Standby | Voltage | Current | Power |
| | | 14 V | 120 mA | 1.68 W |
| | | 24 V | 80 mA | 1.92 W |
| | | 25 V | 76 mA | 1.90 W |
| | Operation (Voice alert, High-brightness LED, Dry contact) | Voltage | Current (average) | Power (average) |
| | | 14 V | 190 mA | 2.66 W |
| | | 24 V | 135 mA | 3.24 W |
| | | 25 V | 128 mA | 3.20 W |
| Built-in Battery | Standby | Voltage | Current | Power |
| | | 8.4 V | 65 mA | 0.55 W |
| | Operation (Voice alert, High-brightness LED, Dry contact) | Voltage | Current (average) | Power (average) |
| | | 8.4 V | 160 mA | 1.34 W |
| Rechargeable Battery | | 8.4 V ; 850 mAh | | |
| Voice Volume | | 75 dB @ 30cm | | |
| Dimension (L*W*H) | | 18.4 cm*11.0 cm*4.0 cm | | |
| Weight | | 600 g | | |
| Operation Temperature | | -10°C ~ 60°C | | |



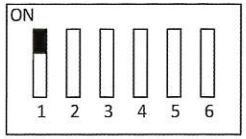
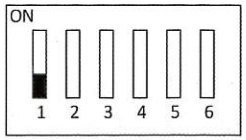
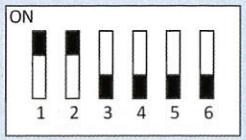
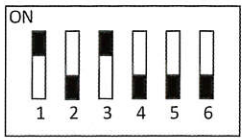
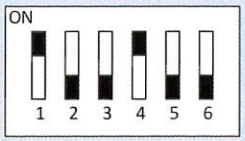
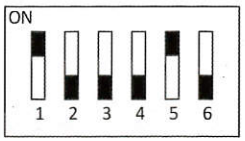
## Earthquake Intensity Scale Table

Source: Central Weather Bureau

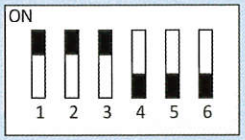
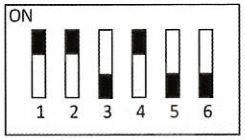
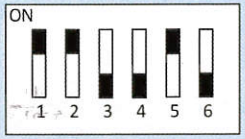
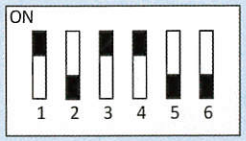
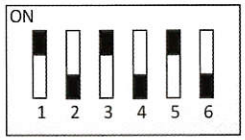
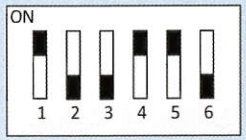
| Intensity | | Strong Ground Acceleration ($cm/s^2$, gal) | Effects on People | Effect Indoors |
|---|---|---|---|---|
| 0 | Micro | below 0.8 | Not felt. | - |
| 1 | Very minor | 0.8~2.5 | Felt only by a few people at rest, vibrates slightly. | - |
| 2 | Minor | 2.5~8.0 | Felt by the majority of people. Some awakened from sleeping. | Hanging lamps and objects vibrate slightly. |
| 3 | Light | 8~25 | Felt by nearly everyone, a few frightened. | Buildings shake; dishes, windows, and doors shake making sounds; hanging objects shake visibly. |
| 4 | Moderate | 25~80 | Many people are quite frightened, looking for safe shelter. Most people are awakened from sleep. | Buildings rock noticeably; unstable objects topple over; heavy furniture moves; may cause slight damage. |
| 5 | Strong | 80~250 | Most people are considerably frightened. | Walls crack; heavy furniture may overturn. |
| 6 | Very Strong | 250~400 | People have trouble walking due to violent rocking. | Damage to some buildings; heavy furniture overturns; doors and windows bend. |
| 7 | Great | above 400 | People move with difficulty due to severe rocking. | Severe damage to or collapse of some buildings; almost all furniture moves or falls down. |

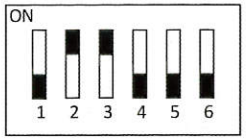
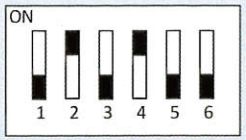
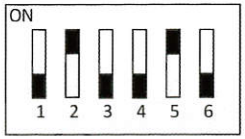
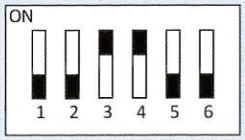
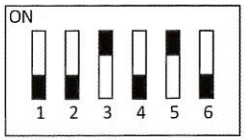
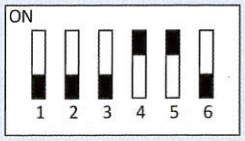
## Switch Function Setting

Setting two acceleration trigger values: the smaller value is the first stage, and the larger value is the second stage.

| PIN | Diagram | Function |
|---|---|---|
| PIN 1 |  | Setting mode (Gal setting)<br>Set the acceleration values of the first and the second stages. |
| |  | Normal model (Keep this setting while operation) |
| **Step 1: Setting Mode** | | |
| PIN 1<br>PIN 2 |  | Setting<br>First trigger value: 60 gal |
| PIN 1<br>PIN 3 |  | Setting<br>First trigger value: 80 gal |
| PIN 1<br>PIN 4 |  | Setting<br>First trigger value: 120 gal |
| PIN 1<br>PIN 5 |  | Setting<br>First trigger value: 250 gal |



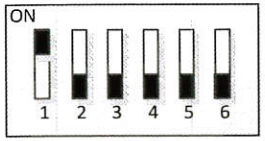
| | | |
|---|---|---|
| PIN 1<br>PIN 2<br>PIN 3 |  | Setting<br>First trigger value: 60 gal<br>Second trigger value: 80 gal |
| PIN 1<br>PIN 2<br>PIN 4 |  | Setting<br>First trigger value: 60 gal<br>Second trigger value: 120 gal |
| PIN 1<br>PIN 2<br>PIN 5 |  | Setting<br>First trigger value: 60 gal<br>Second trigger value: 250 gal |
| PIN 1<br>PIN 3<br>PIN 4 |  | Setting<br>First trigger value: 80 gal<br>Second trigger value: 120 gal |
| PIN 1<br>PIN 3<br>PIN 5 |  | Setting<br>First trigger value: 80 gal<br>Second trigger value: 250 gal |
| PIN 1<br>PIN 4<br>PIN 5 |  | Setting<br>First trigger value: 120 gal<br>Second trigger value: 250 gal |

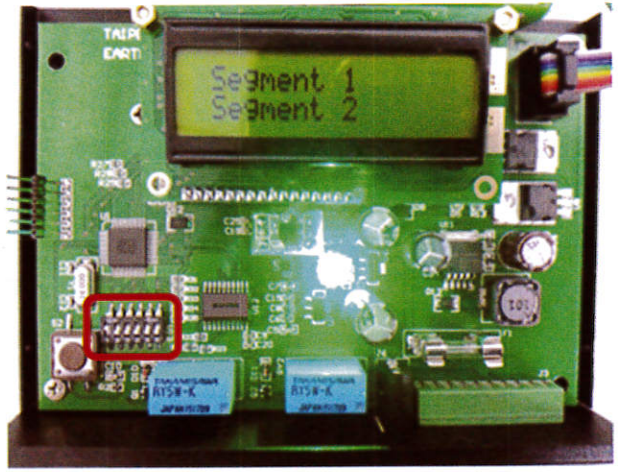
| Step 2: Operation Mode (Pull down PIN 1) | | |
|---|---|---|
| PIN 2<br>PIN 3 |  | Normal Operation<br>First trigger value: 60 gal<br>Second trigger value: 80 gal |
| PIN 2<br>PIN 4 |  | Normal Operation<br>First trigger value: 60 gal<br>Second trigger value: 120 gal |
| PIN 2<br>PIN 5 |  | Normal Operation<br>First trigger value: 60 gal<br>Second trigger value: 250 gal |
| PIN 3<br>PIN 4 |  | Normal Operation<br>First trigger value: 80 gal<br>Second trigger value: 120 gal |
| PIN 3<br>PIN 5 |  | Normal Operation<br>First trigger value: 80 gal<br>Second trigger value: 250 gal |
| PIN 4<br>PIN 5 |  | Normal Operation<br>First trigger value: 120 gal<br>Second trigger value: 250 gal |



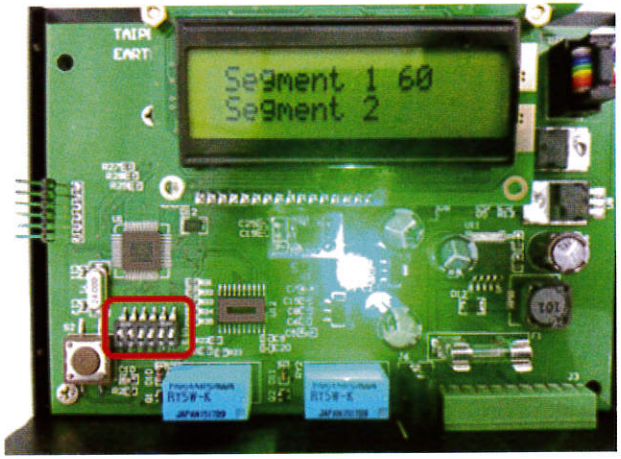
## Setting Example

### Step 1: Setting Mode

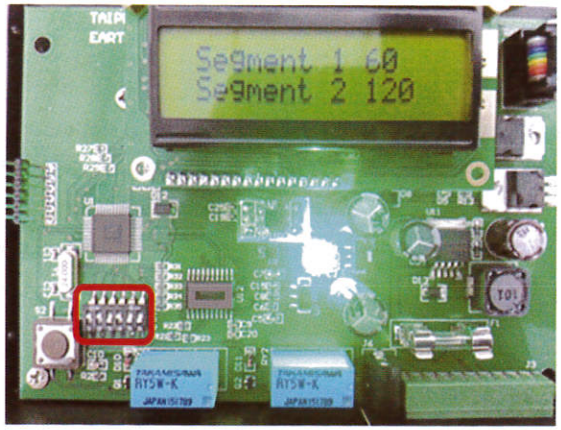



### Step 2: Setting the first trigger value: 60 gal



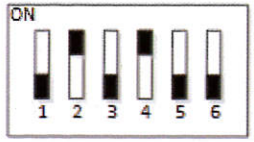
## Step 3: Setting the second trigger value: 120 gal

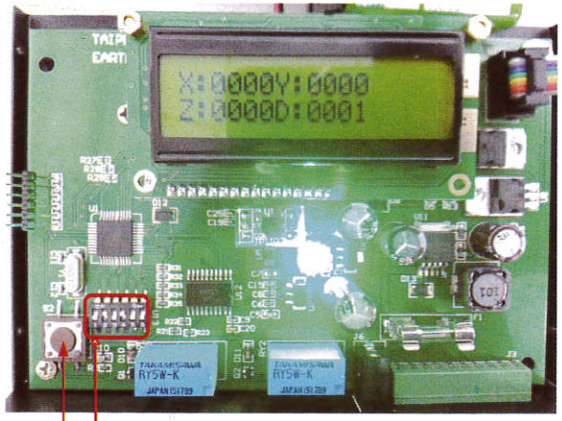



## Step 4: Normal operation

First trigger value: 60 gal

Second trigger value: 120 gal




1. Pull down PIN 1: normal operation mode
2. Press reset bottom