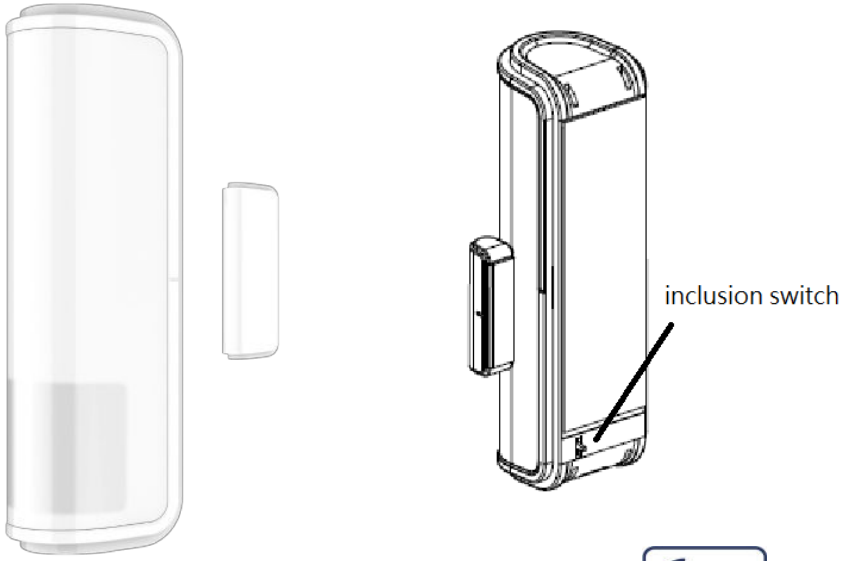
4 in 1 Multi-Sensor PST10 - A/B/C



The 4 in 1 multi-sensor PST10 has PIR, door/window, temperature and light sensor for combining several functionalities in one device.

This device is a security enabled Z-Wave Plus™ product. The encrypted Z-Wave Plus™ messages support PST10 to communicate with other Z-Wave Plus™ products.

PST10 can be used with Z-Wave™ devices (with Z-Wave™ logo) from different manufacturers, it can also be included in the Z-Wave™ networks from different manufacturers.
The product is supported with Over-the-Air (OTA) feature for firmware upgrade.

Function Compare A/B/C

	PIR	Door/Window	Temperature	Light sensor
PST10-A	V	V	V	V
PST10-B	V		V	V
PST10-C		V	V	V

Specification

Power	3VDC (CR123A lithium battery)
RF distance	Min. 40M indoor, 100M outdoor line of sight,
RF Frequency	868.40 MHz, 869.85 MHz(EU) 908.40 MHz, 916.00 MHz(US) 920.9MHz, 921.7MHz, 923.1MHz (TW/KR/Thai/SG)
RF Maximum Power	+10dBm (Peak), -10dBm (Average)
Function	PIR, door/window, temperature and light sensor
Dimension	24.9 x 81.4 x 23.1mm 25.2 x 7.5 x 7 mm (magnetic)
Weight	23.2g (PST10-A, PST10-B) 21.2g (PST10-C)
Location	indoor use only
Operation temperature	-20°C ~ 50°C
Humidity	85%RH max
FCC ID	RHHPST10

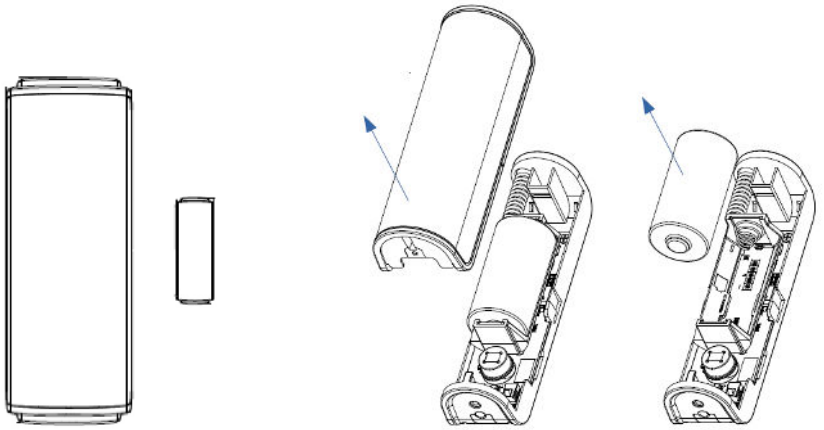
✧ Specifications are subject to change and improvement without notice.

Troubleshooting

Symptom	Cause of Failure	Recommendation
The device can not join to Z-Wave™ network	The device may in a Z-Wave™ network.	Exclude the device then include again.

For Instruction to http:// www.philio-tech.com

Overview



CAUTION

– replacement of a battery with an incorrect type that can defeat a safeguard (for example, in the case of some lithium battery types);

– disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion;

– leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas;

– a battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas

The marking information is located at the bottom of the apparatus

Add to/Remove from Z-Wave™ Network

There are two tamper keys in the device, one is in the back side, another is in the front side. Both of them can add, remove, reset or association from Z-Wave™ network.

The table below lists an operation summary of basic Z-Wave functions. Please refer
to the instructions for your Z-WaveTM Certificated Primary Controller to access the
Setup function, and to Add/Remove/associate devices

Notice: Including a node ID allocated by Z-Wave™ Controller means "**Add**" or "**Inclusion**". Excluding a node ID allocated by Z-Wave™ Controller means "**Remove**" or "**Exclusion**".

Function	Description
Add	1. Have Z-Wave™ Controller entered inclusion mode. 2. Pressing tamper key three times within 2 seconds to enter the inclusion mode. 3. After add successful, the device will wake to receive the setting command from Z-Wave™ Controller about 20 seconds.
Remove (Exclusion)	1. Have Z-Wave™ Controller entered exclusion mode. 2. Pressing tamper key three times within 2 seconds to enter the exclusion mode. Node ID has been excluded.
Reset	***Notice: Use this procedure only in the event that the primary controller is lost or otherwise inoperable.*** 1. Pressing button four times and keep about 5 seconds. 2. IDs are excluded and all settings will reset to factory default.
SmartStart	1. Product has a DSK string, you can key in first five digit to increment SmartStart process, or you can scan QR code. 2. SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity. *notice1:The QR code can be found on the device or in the box.
Association	This machine provides 2 groups of nodes. Group one support 1 nodes maximum and group two support 5 nodes maximum. Group 1(Lifeline Group): Used for returned events. Command class: 1. Notification report 2. Sensor multilevel report 3. Device Reset Locally Notification 4. Battery Report 5. Indicator Report Group 2: Used for light control, the device will send the "Basic Set" command to this group. Command class: 1. Basic Set
• Failed or success in add/remove the node ID can be viewed	

from Z-Wave™ Controller.

Notice 1: Always RESET a Z-Wave™ device before trying to add it to a Z-Wave™ network

Z-Wave™ Notification

After the device adding to the network, it will wake-up once per day in default. When it wake-up it will broadcast the "Wake Up Notification" message to the network, and wake-up 10 seconds for receive the setting commands.
The wake-up interval minimum setting is 30 minutes, and maximum setting is 120 hours. And the interval step is 30 minutes.

If the user want to wake-up the device immediately, please remove the front cover, and press the tamper key once. The device will wake-up 10 seconds.

Z-Wave™ Message Report

When the PIR motion triggered, the device will report the trigger event and also report temperature and illumination level.

*** Motion Report:**
When the PIR motion detected, the device will unsolicited to send the report to the nodes in the group 1.

Notification Report (V8)
Notification Type: Home Security (0x07) Event: Motion Detection, Unknown Location (0x08)

*** Door/Window Report:**
When the door/window state changed, the device will unsolicited to send the report to the nodes in the group 1.

Notification Report (V8)
Notification Type: Access Control (0x06) Event: Door/Window is open (0x16) Door/Window is closed (0x17)

*** Tamper Report:**
The tamper keys are pressed over 5 seconds. The device will into the alarm state. In that state, if any one of the tamper keys be released, the device will unsolicited to send the report to the nodes in the group 1.

Notification Report (V8)
Notification Type: Home Security (0x07) Event: Tampering. Product covering removed (0x03)

*** Temperature Report:**
When the PIR motion detected state changed, the device will unsolicited to send the "Sensor Multilevel Report" to the nodes in the group 1.
Sensor Type: Temperature (0x01)
*** Temperature differential report ***
This function default is enabled, to disable this function by setting the configuration NO.12 to 0.
In the default, when the temperature is changed to plus or minus one degree Fahrenheit (0.5 degree Celsius), the device will report temperature information to the nodes in the group 1.
Caution 1: *Enable this functionality, it will cause the PIR Motion to disable detection when the temperature measurement. In other words, The PIR motion will blind one second in every one minute.*

*** LightSensor Report:**
When the PIR motion detected state changed, the device will unsolicited to send the "Sensor Multilevel Report" to the nodes in the group 1.

Sensor Type: Luminance (0x03)
*** LightSensor differential report ***
This function default is disabled, to enable this function by setting the configuration NO.13 not to zero.
And if the LightSensor is changed to plus or minus the value (setting by the configuration NO.13), the device will report illumination information to the nodes in the group 1.

Caution 1: *Enable this functionality, it will cause the PIR Motion to disable detection when the illumination measurement. In other words, The PIR motion will blind one second in every one minute.*

*** Timing Report:**
Beside the event triggered could report message, the device also support the timing unsolicited report of the status.

- Door/window state report: Every 6 hours report once in default. It could be changed by setting the configuration NO. 2.
- Battery level report: Every 6 hours report once in default. It could be changed by setting the configuration NO. 8.
- Low battery report: When the battery level is too low. (Lose battery report when a power-on or PIR trigger.)
- LightSensor level report: Every 6 hours report once in default. It could be changed by setting the configuration NO. 9.
- Temperature report: Every 6 hours report once in default. It could be changed by setting the configuration NO. 10.

Notice: The configuration NO. 8 could be setting to zero to disable the auto report. And the configuration NO. 11 could change the tick interval, the default value is 30, if setting to 1, that means the minimum auto report interval will be one minute.

Power Up Procedure

*** Battery Power Check**
When the device power up, the device will detect the power level of the battery immediately. If the power level is too low, the LED will continue flash about 5 seconds. Please change another new battery.

*** Wake**
When the device power on, the device will wake about 20 seconds. In this duration, the controller can communicate with the device. Normally the device is always sleeping to save the battery energy.

Security Network

The device support the security function. When the device included with a security controller, the device will auto switch to the security mode. In the security mode, the follow commands need using Security CC wrapped to communicate, otherwise it will not response.

COMMAND_CLASS_VERSION_V3
COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2
COMMAND_CLASS_DEVICE_RESET_LOCALLY
COMMAND_CLASS_ASSOCIATION_V2
COMMAND_CLASS_ASSOCIATION_GRP_INFO
COMMAND_CLASS_POWERLEVEL
COMMAND_CLASS_CONFIGURATION
COMMAND_CLASS_NOTIFICATION_V8
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V4
COMMAND_CLASS_BATTERY
COMMAND_CLASS_SENSOR_MULTILEVEL_V11
COMMAND_CLASS_WAKE_UP_V2

Operation Mode

There are two modes "Test" and "Normal". "Test Mode" is for the user test the sensor function when installation."Normal Mode" is for the normal operation.
Operation Mode can be switched by pressing button or tamper key two

times. LED can indicate which mode it is. Lighting on one second means entering test mode, flashing once means entering normal mode.

When the event triggered, normally the LED won't indicated, unless the battery is in the low level, the LED will flash once. But in the "Test Mode" the LED also will light ON one second.

When the event triggered, the device will emit the signal to turn ON the lighting equipment, those nodes are in the group 2. And delay a while to turn OFF the lighting equipment. The delay time is setting by the configuration NO. 7.

The PIR motion re-detected interval, in the "Test Mode" fixed to 10 seconds. In the "Normal Mode", it according to the setting of the configuration NO. 6.

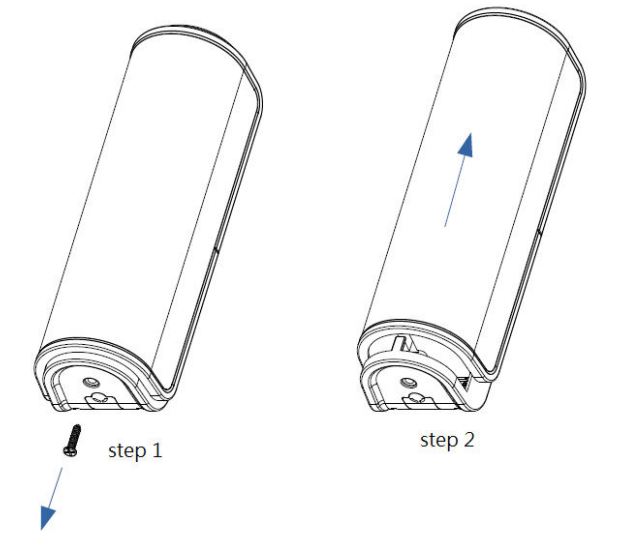
Notice: When the tamper key of the back side is released, the device always in the "Test Mode", no matter the DIP switch setting.

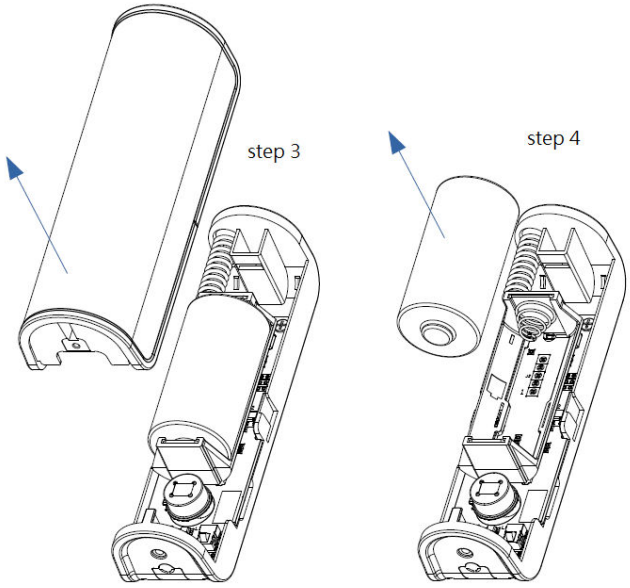
Battery Installation

When the device reports the low battery message, users should replace the battery. The battery type is CR123A, 3.0V.

To open the front cover, follow the steps below.
1. Use a screwdriver to loosen the screw. (step 1)
2. Hold the front cover and push it up. (Step 2)

Replace the battery with a new one and replace the cover.
1. Align the bottom of the front cover with the lower cover. (Step 3).
2. Push the top of the front cover to close and lock the screw. (Step 4 and step 1)





Installation

1. In the first time, add the device into the Z-Wave™ network. First, make sure the primary controller is in the inclusion mode. And then pressing tamper key three times within 2 seconds to enter the inclusion mode. After add successful, the device will wake to receive the setting command from Z-Wave™ Controller about 20 seconds.(refer to fig. 1)

2. Let the controller associate with the device into the first group, any light switch that intend to be turned on when the device trig please associate with the device into the second group.

3. In the accessory pack, There is double-coated tape. you can use a double-coated type for the test at the beginning. The right way for double coated type installation is to stick it to the position of the back. the sensor will enter the test mode, You may test if the installed position is good or not by this way (refer to fig. 2 and fig. 3)

fig. 1

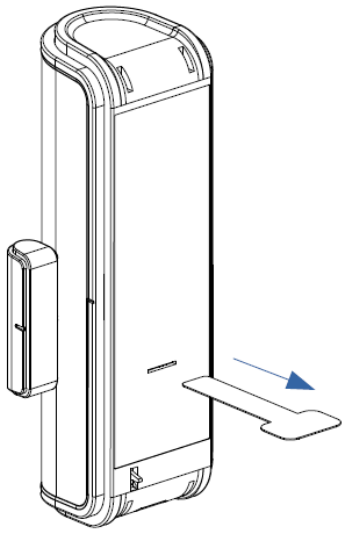


fig. 2

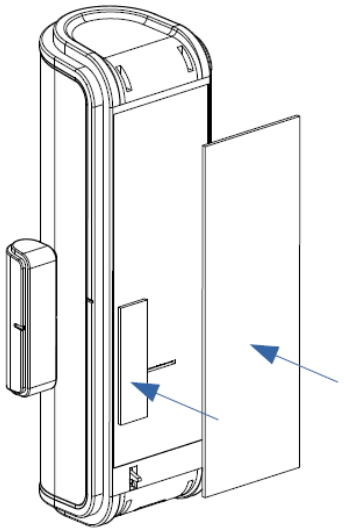


fig. 3

CAUTION:

Lens installation direction is down

Z-Wave Configuration Settings

	Name	Def.	Valid	A	B	C	Description
1	Basic Set Level	99	0 ~ 99	☑	☑	☐	Setting the BASIC command value to turn on the light. For dimmer equipment 1 to 99 means the light strength.0 means turn off the light.
2	Auto Report Door/ Window State Time	12	0~127	☑	☐	☑	The interval time for auto report the door/window state. 0 means turn off auto report door/window state. The default value is 12. The tick time can setting by the configuration No.11.
3	PIR Sensitivity	99	0 ~ 99	☑	☑	☐	PIR sensitivity settings. 0 means disable the PIR motion. 1 means the lowest sensitivity, 99 means the highest sensitivity. High sensitivity means can detected long distance, but if there is more noise signal in the environment, it will re-trigger too frequency.
4	Operation Mode	0x31	All				Operation mode. Using bit to control.
		1		☑	☑	☑	**Bit0**: Setting the temperature scale. (1: Fahrenheit, 0:Celsius)
		0		-	-	-	**Bit1**: Reserve.
		0		☑	☐	☑	**Bit2**: Disable the door/window function. (1:Disable, 0:Enable)
		0		-	-	-	**Bit3**: Reserve.
		1		☑	☑	☑	**Bit4**: Disable the illumination report after event triggered. (1:Disable, 0:Enable)
		1		☑	☑	☑	**Bit5**: Disable the temperature report after event triggered.
							(1:Disable, 0:Enable)
		0		-	-	-	**Bit6:** Reserve.
		0		-	-	-	**Bit7:** Reserve.
5	Customer Function	0x13	All				Customer function switch, using bit control.
		1		☑	☑	☑	**Bit0**: Tamper On/Off (1:On, 0:Off)
		1		☑	☑	☑	**Bit1**: Red LED On/Off (1:On, 0:Off)
		0		☑	☑	☐	**Bit2**: Motion Off.(1:On, 0:Off) Note: Depends on the Bit2, 1: Report Notification CC, Type: 0x07, Event: 0xFE
		10		☑	☑	☑	**Bit3**、**Bit4**: Trigger Basic on/off function. 00: Disable 01: Door / Window Enable, PIR Disable 10: PIR Enable, Door / Window Disable 11: PIR & Door / Window Enable
		0		☑	☐	☑	**Bit5**: Door/Window Trigger Basic on/off function. 0: Open Door/Window trigger 1: Close Door/Window trigger
		0		-	-	-	**Bit6**: Reserve.
		0		-	-	-	**Bit7:** Reserve.
6	PIR Re-Detect Interval Time	6	1 ~ 60	☑	☑	☐	In the normal mode, after the PIR motion detected, setting the re-detect time. 10 seconds per tick, default tick is 6 (60 seconds). Setting the suitable value to prevent received the trigger signal too

	Name	Def.	Valid	A	B	C	Description
							frequently. Also can save the battery energy. Notice: If this value bigger than the configuration setting NO. 7 There is a period after the light turned off and the PIR not start detecting.
7	Turn Off Light Time	7	1 ~ 60	☑	☑	☑	After turn on the lighting, setting the delay time to turn off the lighting when the PIR motion or door/windows is not detected . 10 seconds per tick, default tick is 7 (70 seconds). 0 means never send turn off light command.
8	Auto Report Battery Time	12	0 ~ 127	☑	☑	☑	The interval time for auto report the battery level. 0 means turn off auto report battery. The default value is 12. The tick time can setting by the configuration No.11.
9	Auto Report LightSensor Time	12	0 ~ 127	☑	☑	☑	The interval time for auto report the illumination. The default value is 12. The tick time can setting by the configuration No.11.
10	Auto Report Temperatur e Time	12	0 ~ 127	☑	☑	☑	The interval time for auto report the temperature. The default value is 12. The tick time can setting by the configuration No.11.
11	Auto Report Tick Interval	30	0 ~ 0xFF	☑	☑	☑	The interval time for auto report each tick. Setting this configuration will effect configuration No.2 , No.8, No.9 and No.10. The unit is 1 minute.
12	Temperatur e Differential Report	2	1 ~ 100	☑	☑	☑	The temperature differential to report. 0 means turn off this function. The unit is 0.5 Celsius. Enable this function the device will detect per 30 seconds. And when the temperature is over 140 degree Fahrenheit, it will continue report. Enable this functionality will cause some issue please see the detail in the "Temperature Report" section.
13	LightSensor Differential Report	20	1 ~ 100	☑	☑	☑	The LightSensor Differential to report. 0 means turn off this function. The unit is percentage. Enable this function the device will detect per 10 seconds. And when the lightSensor is over 20 percentage, it will continue report.
14	PIR Trigger Mode	1	1~3	☑	☑	☐	PIR Trigger Mode: Mode1: Normal Mode2: DayTime Mode3: AtNight
15	PIR NightLine	100	1 ~ 10000	☑	☑	☐	PIR night line Lux conditions: LightSensor determines whether the level is night. (Unit 1Lux)

Z-Wave Supported Command Class

Command Class	Version	Required Security Class
Z-Wave Plus™ Info	2	None
Version	3	None
Supervision	1	None
Transport Service	2	None
Security 2	1	None
Device Reset Locally	1	Highest granted Security Class
Association	2	Highest granted Security Class
Association Group Information	3	Highest granted Security Class
Powerlevel	1	Highest granted Security Class
Configuration	4	Highest granted Security Class
Notification	8	Highest granted Security Class
Firmware Update Meta Data	5	Highest granted Security Class
Manufacturer Specific	2	Highest granted Security Class
Battery	1	Highest granted Security Class
Multilevel Sensor	11	Highest granted Security Class
Wake up	2	Highest granted Security Class
Indicator	3	Highest granted Security Class
Multi Channel Association	3	Highest granted Security Class

Troubleshooting

Symptom	Cause of Failure	Recommendation
The device can not join to Z-Wave™ network	The device may in a Z-Wave™ network.	Exclude the device then include again.

Disposal

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

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FCC Interference 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 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.

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Warning

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

When replacing old appliances with new once, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.

警語:

「取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。」