

Stand-alone Fire Detector General Guidelines on Purchase, Installation & Maintenance



Hong Kong Fire Services Department
www.hkfsd.gov.hk

Stand-alone Fire Detector General Guidelines on Purchase, Installation & Maintenance

Hong Kong Fire Services Department

September 2021

PREAMBLE

Stand-alone fire detectors (SFD) are designed to give early warning to occupants in premises at the incipient stage of a fire, enabling their timely evacuation before the escape route becomes unsafe due to the effects of smoke and heat.

SFDs are popular worldwide and proved to be a highly cost-effective means to reduce losses from fire. Installation of stand-alone battery-operated fire detectors is simple. Owners can carry out tests themselves and no special maintenance skills are required. The Fire Services Department (FSD) encourages members of the public to install SFDs in their premises to enhance building fire safety and provide better protection of life and property in case of fire.

Starting from 1 September 2021, SFDs, which are installed in premises upon one's volition, are exempted from the application of the Fire Service (Installations and Equipment) Regulations (Cap. 95B) (FS(IE)R). The public will no longer be required to engage a Registered Fire Service Installation Contractor (RFSIC) for installation and maintenance of their purchased SFDs. It is in this context that the FSD comes up with these Guidelines to provide the public with some views and general information on SFDs as follows:

- **Purchase** of SFDs that meet international/national standards
- **Installation** of SFDs in suitable locations
- **Regular maintenance** of SFDs

The technology of SFDs is developing rapidly and these Guidelines do not intend to cover exhaustively all requirements for their installation and maintenance. To ensure the reliability of SFDs, please refer to the user manual for manufacturer's installation and maintenance recommendations.



LEGAL EXEMPTION

Subsequent to the amendment of the Fire Service (Installations and Equipment) Regulations (Cap. 95B) (FS(IE)R) with effect from 1 September 2021, SFDs are **exempted** from the application of regulations 6(1) and 7(1) of FS(IE)R. Owners/occupants of any buildings/premises will not be required to engage an RFSIC for the installation, maintenance, inspection or repair of any SFDs which are installed upon the premises owners/occupiers' own volition.

Moreover, SFDs will be **exempted** from the application of regulation 8 of FS(IE)R, which stipulates that SFD owners shall always keep their SFDs in efficient working order and have them inspected by an RFSIC at least once in every 12 months.

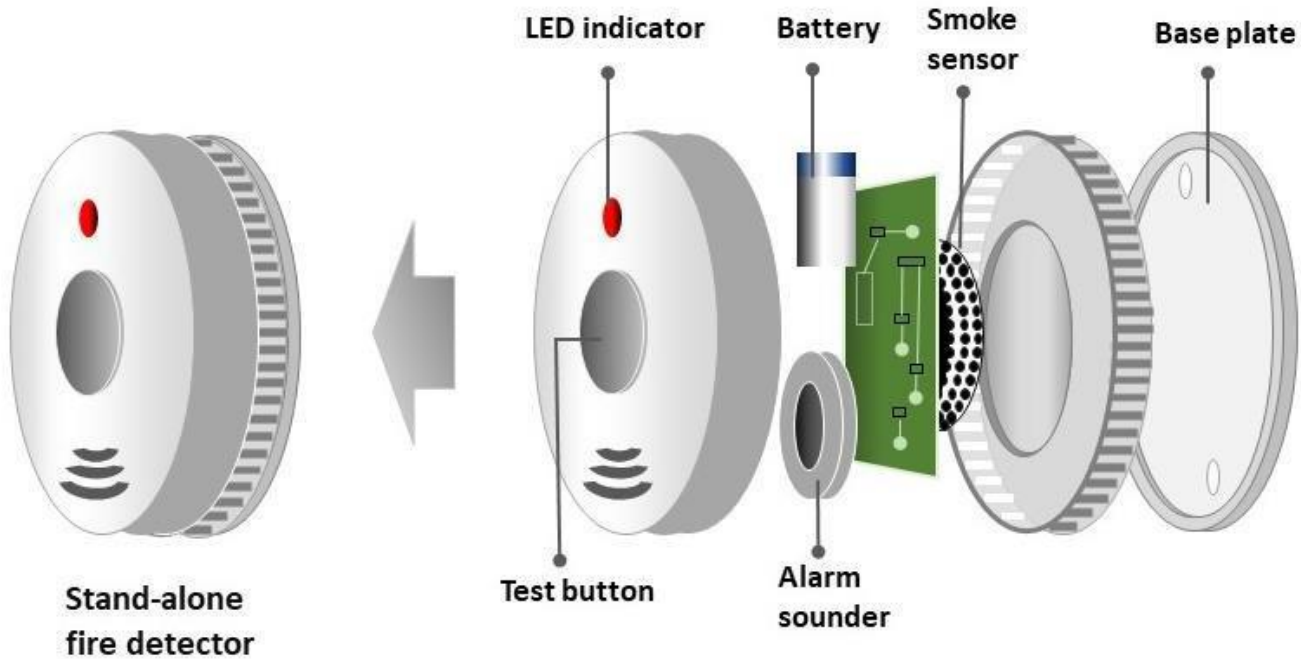
Nevertheless, as to those SFDs that are required by or pursuant to law to be installed, they will continue to be regulated by FS(IE)R; and their owners have to continue to comply with relevant statutory duties.

Definition of stand-alone fire detector:

“Stand-alone fire detector means a self-contained battery-operated installation that is manufactured, used or designed to be used for the purpose (whether or not the sole purpose) of detecting, and giving warning (by an audible alarm or otherwise) of, fire.”
Amendment of Fire Service (Installations and Equipment) Regulations (Cap. 95B) (Regulation 2)

ABOUT SFD

Generally, an SFD is a palm-sized device that gives sufficient sound level to alert premises occupants upon its actuation. It is battery-powered, mainly consisting of a smoke/heat sensor, alarm sounder, battery and test button without other ancillary.



Composition of a typical SFD

▶ LED indicator	to indicate the status / condition of the device
▶ Test button	to facilitate users to test the device periodically
▶ Battery type	replaceable: supplied with at least one year or above lifespan, which requires annual replacement by a 9V or AA type battery non-replaceable: supplied with a 10-year sealed lithium battery
▶ Alarm sounder	an alarm output of at least 80 dB(A) or above, measured at 3 metres away from the device
▶ Smoke/heat sensor	two common sensors are smoke sensor and heat sensor; for the smoke sensor, it can be further divided into photoelectric type and ionisation type
▶ Base plate	A detachable base plate for ease of mounting to ceiling or walls

HOW TO PURCHASE

Purchasing a reliable and effective SFD is the first step to safeguard the fire safety of your premises. At present, SFDs can be purchased from local fire service installations and equipment shops, electrical goods and appliances stores and online platforms (where they are commonly referred to as smoke alarm). For quality assurance, it is advisable to purchase SFDs only from reputable traders. The following information will help identify the most suitable SFD.

Step 1: Selecting the type of SFD

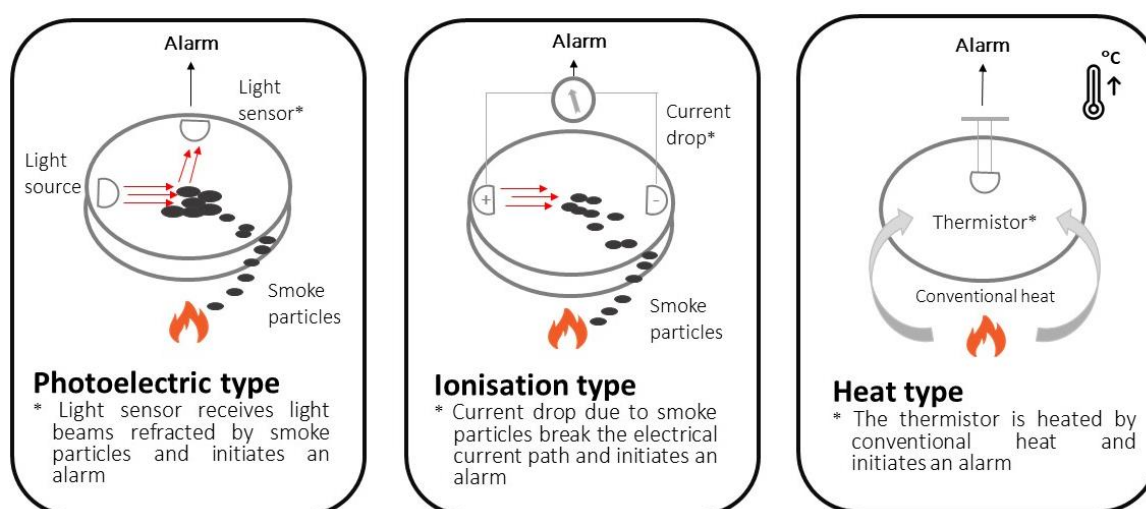
Types of SFD

Smoke detectors generally detect a fire more quickly than heat detectors. **In premises such as residential units, photoelectric smoke detectors will be more suitable.** However, the following detectors can also be chosen to suit actual needs.

▶ Smoke detector

- (i) Photoelectric type detector – detects smoke quickly, especially smoke from smouldering fires (fires burning slowly with smoke but no obvious flames).
- (ii) Ionisation type detector* – responds quickly to flaming fires (e.g. burning of flammable liquid, papers, etc.). Ionization type smoke detector uses a very small amount of a radioactive substance in the sensing chamber to enable detection of smaller combustible particles and invisible combustion products.

- ▶ **Heat detector** – suitable to areas where dust, fumes or moisture can cause nuisance to photoelectric or ionisation type detectors, such as kitchens, laundry rooms, garages, etc.



Working principle of various type of detectors

* Note: Ionisation involves radioactive substance which is under the regulatory control by the Radiation Board of Hong Kong (RBHK), HKSARG. For details, please contact the FSD or the RBHK.

Step 2: Selecting SFDs which meet relevant standards

Testing standards

SFDs should comply with international or national standards. Examples of the commonly adopted standards for SFDs are:

Detection	Standard's Code	Name of standards
Smoke	AS 3786-2014	Smoke alarms using scattered light, transmitted light or ionization
	EN 14604:2005	Smoke alarm devices
	GB 20517-2006	Fire detection and alarm systems – Smoke alarms
	ISO 12239	Smoke alarms using scattered light, transmitted light or ionization
	UL 217	Standard for safety for smoke alarms
Heat	BS 5446-2:2003	Fire detection and fire alarm devices for dwellings – Part 2: Specification for heat alarms

An SFD, if successfully tested and verified against relevant standards, will be listed and published by a Product Certification Body. To purchase SFDs from other regions via online platforms, you should choose those with their packaging bearing certification marks, with some commonly used laid down as follows:



CCC
標誌



BSI
Kitemark



LPCB
Certification
Mark



TÜV
Rheinland
Certification
Mark



UL Listing
Mark



ETL
Listed Mark



SAI Global
Certification
Mark



ActiveFire
Certification
Mark

When buying an SFD, it is also important to check the information on the packaging or label:

- ▶ Detector type
- ▶ Standard or Product Certification Body stamp
- ▶ Manufacture or replacement date
- ▶ User manual (including installation and maintenance details)



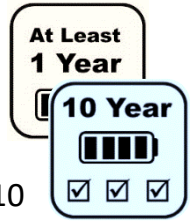
Key Information

- ① **Detector type:**
Smoke/ Heat
- ① **Standards**
GB 20517 / EN 14604 / UL 217
- ② **Manufacture date**
1 Sep 2021 / 1.9.2021
- ③ **User manual**

Step 3: Battery's efficiency

There are two main power sources for SFDs: replaceable battery and non-replaceable battery.

- ▶ Replaceable batteries type, usually 9V battery or AA type battery, shall be capable of operating an SFD for at least one year. Some batteries can operate an SFD up to 10 years.
- ▶ Non-replaceable battery is usually a sealed lithium type which can run for 10 years without the need for replacement.



Sealed battery which can be used for 10 years



External battery which requires annual replacement

Recommendation:

If annual battery replacement is not feasible, **models with lithium battery will be a better option**. Remember, only SFDs with working battery can save lives.

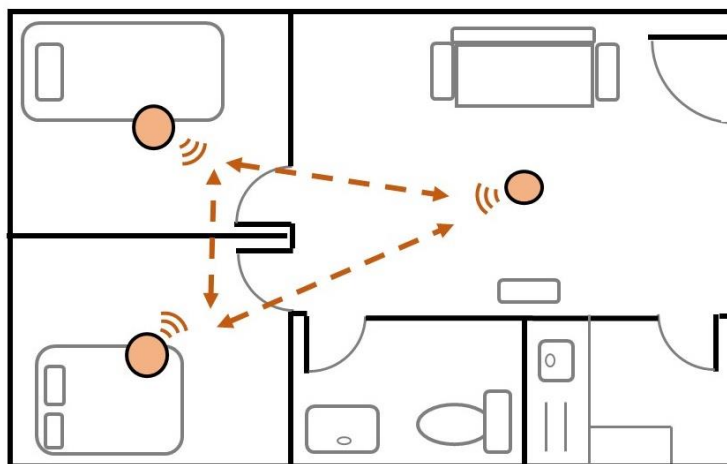
Step 4: Deciding on the quantity

- ▶ The number of SFDs to be installed should be determined by the number of rooms/compartments in the premises.
- ▶ To provide better protection, it is recommended to install an SFD in every room/compartment. For more information, please refer to the section of “How to install” in these Guidelines.

Step 5: Choosing other functions

Wireless interconnection feature

- ▶ Some SFD models are equipped with the wireless interconnection feature in which when one SFD activates, all other connected SFDs in the premises will sound.



Device for hearing impaired persons

- ▶ There are SFD models available in the market that cater for hearing impaired persons. The models with auxiliary equipment such as vibrating pad or visual alarms are designed to alert these users in case of fire.

HOW TO INSTALL

It is important as to where an SFD is to be installed. Considerations should be given to factors as follows:

Location for installation

- ▶ Fire happens anywhere. It is recommended that an SFD be installed in each room, including bedroom, living room, dining room, etc. (except kitchen* and bathroom) to achieve maximum protection.
- ▶ If you choose to install only one SFD, it should be set up along the path of the main escape route (e.g. immediate area of the living room near the bedroom).

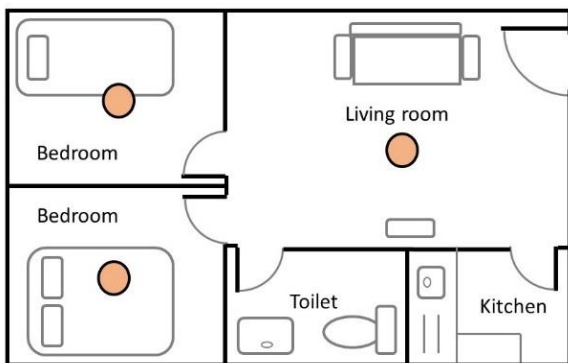


Diagram 1 – Two Bedroom unit

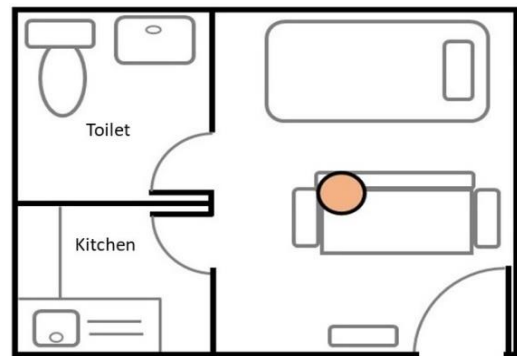


Diagram 2 – Bedsit unit

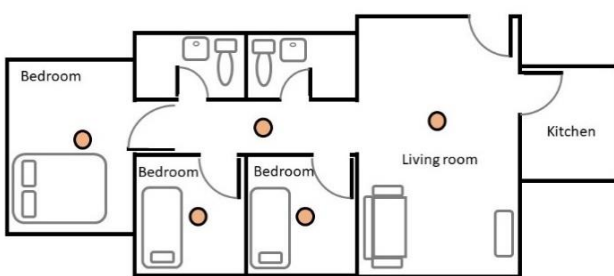


Diagram 3 – Three Bedroom Unit

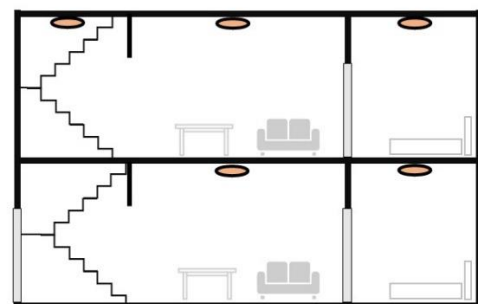
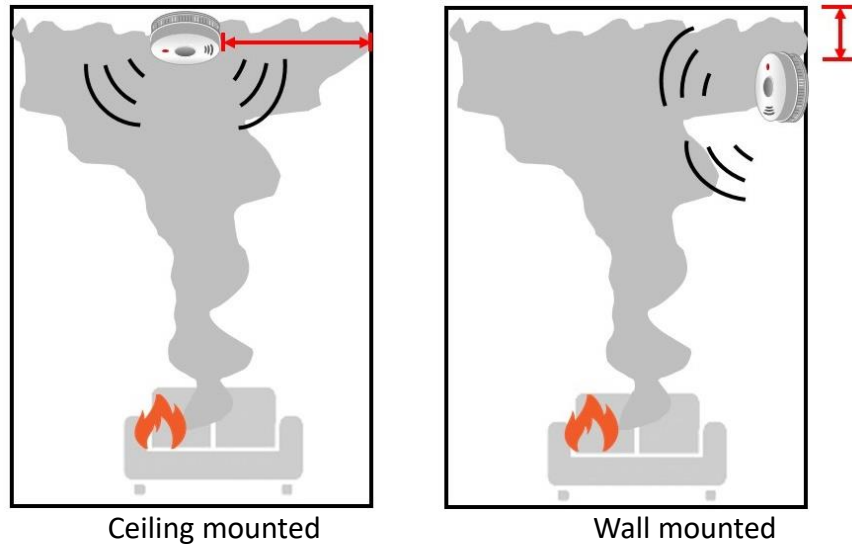


Diagram 4 – Two-storey or more

● Recommended Place

* Heat detector can be installed in kitchen

- ▶ An SFD is best placed on the ceiling or high on walls as smoke rises to the ceiling and spreads horizontally.
- ▶ Check the user manual for a minimum distance to be maintained between an SFD and the ceiling or wall (see the red arrows in the diagrams below).



Method of installation

- ▶ Read the instructions from the manufacturer carefully before installation.
- ▶ Attach the mounting plate to the surface of the ceiling or high on walls by screws or adhesive tape.
- ▶ Complete the installation by mounting the SFD with the battery installed.
- ▶ Finally, press the “test button” to confirm that the SFD’s alarm is in proper working order.



Tips:

After installation, you should inform people in the premises of the locations of the SFD, and familiarise them with the SFD by pressing its test button to activate the alarm sound.

Locations not suitable for installation

To prevent false alarms, an SFD should not be placed:

- ✘ too close to an air-conditioning vent or fan blade
- ✘ too close to a light fitting
- ✘ too close to the immediate vicinity of a kitchen
- ✘ too close to a bathroom, where steam may be present



What to do if the stand-alone fire detector is activated in my flat?

When you hear the alarm of the SFD, you should immediately check the surroundings for signs of fire:

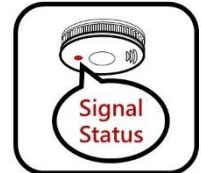
- ▶ If a fire breaks out, you should evacuate as soon as possible, or put out the fire if it is safe to do so. When escaping from the flat, you should:
 - ☑ Keep calm and tell everyone in your flat to leave;
 - ☑ Bring along the three useful items for fire escape (mobile phone, keys and wet towel) and close the flat door;
 - ☑ Escape by the nearest staircase and do not use the lift ;
 - ☑ Break the breakglass unit in the corridor to activate the fire alarm;
 - ☑ Call “999” to report the fire when you are safe.
- ▶ If no fire is found, or it is a false alarm caused not by a fire but smoke, you may press the mute button to deactivate the alarm. For some models, the alarm will be automatically reset when the smoke is dispersed.

HOW TO MAINTAIN

Regular maintenance of SFDs is of paramount importance to ensure their proper functioning. Users of SFDs should be responsible for the regular maintenance in accordance with manufacturer's recommendations. The followings are some key maintenance routines:

Visual checking

- ▶ Check if the LED light on the SFD is flashing momentarily every 40 to 60 seconds, which suggests that it is in good working order.
- ▶ Check and clean the SFD vents for accumulated dust regularly. Keep the SFD free from blockage.
- ▶ Never paint your SFDs.



Pressing "Test button" regularly

- ▶ Every SFD has a test button for status checking that is typically located on the front of the unit. Hold down the test button until you hear a loud alert sound, then release to stop the sound.
- ▶ Press the test button at least once a month, or at an interval as recommended by the manufacturer, for testing.

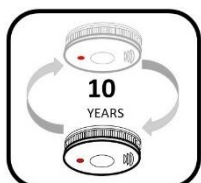
Change of battery

- ▶ SFDs with dry-cell batteries must have their batteries replaced periodically. When the battery is too low to operate an SFD, an audible signal will be given to alert the user to the need to replace battery.
- ▶ It is recommended that the battery should be replaced every 12 months or as per manufacturer's recommendations even the "low battery" warning signal has yet to be triggered.
- ▶ For the non-replaceable battery type, the whole SFD set should be replaced when the low battery warning signal is heard.



Replacement

- ▶ Aged SFD may not function properly. All SFDs need to be replaced every 10 years or as per manufacturer's recommendations.
- ▶ Check the manufacture date at the back of the SFD, which may help predict its life span.



Important: Please make sure that your SFD is maintained regularly. Only an SFD in efficient working order can save lives.

Q 1	Why should I need a Stand-alone Fire Detector (SFD) for my flat?
Ans. 1	An SFD is installed to give early warning to occupants at the incipient stage of a fire to enable them to take appropriate action or timely evacuation.
Q 2	Is it a statutory requirement to install an SFD?
Ans.2	Starting from 1 September 2021, all SFDs which are installed in premises upon one's volition is exempted from the application of the Fire Service (Installations and Equipment) Regulations (Cap. 95B) (FS(IE)R). In other words, members of the public will no longer be required to engage a Registered Fire Service Installation Contractor for the installation and maintenance of their purchased SFDs. As for SFDs that are required by or pursuant to law to be installed, they will continue to be regulated by FS(IE)R; and the owners have to continue to comply with relevant statutory duties.
Q 3	How to tell whether a fire detector in the flat is exempted from the regulation?
Ans.3	Subsequent to the amendment of FS(IE)R, all SFDs installed in premises upon the owners/occupiers' own volition are exempted, except those SFDs which are required by or pursuant to law to be installed. In general, an SFD which is exempted from the regulation should have a test button and a built-in alarm sounder powered by battery with no additional electrical wiring.
Q 4	Is it necessary to purchase SFDs approved by the Fire Services Department (FSD)?
Ans.4	The sale of SFDs is not subject to the FSD's regulation, not do they require prior approval from the department. Members of the public should purchase SFDs that comply with relevant international/national standards which should have been adopted by different places around the world.
Q 5	Will the SFD notify the FSD automatically after being activated?
Ans. 5	The actuation of an SFD will not notify the FSD automatically. It will only produce an alarm to alert occupants of the premises upon actuation.

Q 6	A detector was provided for “Open Kitchen” when I purchased my unit. Under the newly amended regulation, the SFD is exempted from relevant requirements. Can I remove the detector provided therein?
Ans. 6	No, a detector installed in an “Open Kitchen” is not an SFD. The detector is an integral part of a fire detection system, with its signal linked with the fire services control panel / the building management office / the common fire alarm system of the floor where the premises with open kitchen is situated, and the detector is regulated under the FS(IE)R.
Q 7	Are SFDs with “Smart Home” features exempted from the FS(IE)R?
Ans. 7	SFDs with smart home features have become increasingly popular and they will also be exempted from the application of the amended FS(IE)R.
Q 8	How to prevent the occurrence of false alarm?
Ans. 8	SFDs can operate effectively and reliably nowadays as they are built with sophisticated technology and covered by various international/national standards regulating their designs and manufacture. Most SFDs’ user manuals recommend users not to install them close to air-conditioning outlet, light-fitting, bathroom and kitchen, etc. so as to minimise the occurrence of false alarms.
Q 9	How often do I need to change the SFD’s battery?
Ans. 9	The battery of an SFD generally has at least one-year life span. Thanks to the advance of battery technology, some SFD’s battery can last as long as 10 years. Nevertheless, periodic checking of the battery status is recommended, such as conducting monthly checking.
Q 10	Is there any detector designed for people with hearing impairment?
Ans. 10	There are models with auxiliary equipment in the market designed specifically for people with hearing impairment, such as those with strobe lights and a bed shaker pad. Featured with strong lights and vibrating pads, the devices can alert hearing impaired occupants of the unit to a fire.

For enquiries, please contact our Fire Service Installations Task Force at 2733 1567 or email: sfd@hkfsd.gov.hk



Hong Kong Fire Services Department