



Promotion of Wider Use of Stand-alone Fire Detectors in Hong Kong

Purpose

1. Stand-alone fire detectors are popular worldwide and proven as a highly cost-effective means in minimizing the losses in case of fire. With a view to enhancing the building fire safety and providing better protection of life and property in case of fire, the Fire Services Department (FSD) aims to promote the wider use of stand-alone fire detectors in buildings of Hong Kong. This paper provides background information on stand-alone fire detectors and other related matters.

Background

2. Over the years, it is the mission of the FSD to formulate fire safety policy for better protection of life and property in the territory. Prompted by the analysis of some major building fires that occurred recently in Hong Kong, the FSD is exploring pragmatic ways to enhance building fire safety with an aim of providing better protection to the general public.

3. Having regard to global experiences as well as local fire safety requirements for various types of premises, the FSD is of the view that promoting a wider use of stand-alone battery-operated fire detector (“stand-alone fire detector”) would be the simplest and most practical way to achieve our objective. The purpose of the installation of stand-alone fire detector is to give early warning to occupants at the incipient stage of a fire that enables the occupants to evacuate before the escape route becomes unable to save themselves due to the effects of exposure to smoke, heat or toxic effluent, particularly in circumstances where the occupants fall asleep in their premises when fires occur.



Figure 1 - Typical stand-alone fire detector

Stand-alone Fire Detector's Working Principle & Installation

4. A stand-alone fire detector is a palm-sized device that gives sufficient sound level to alert building occupants upon its actuation. Depending on the types, they can detect smoke, heat or products of combustion at the incipient stage of fires and give warning accordingly. Fire detectors, which are statutorily required to be installed in buildings and licensed premises, such as commercial buildings, industrial buildings, restaurants and aged homes, are normally connected with various components and circuitry forming part of a fire detection system of a building/premise. Whereas stand-alone fire detector is a self-operable device which mainly consists of smoke/heat sensor, alarm sounder, battery and test button without other ancillary.

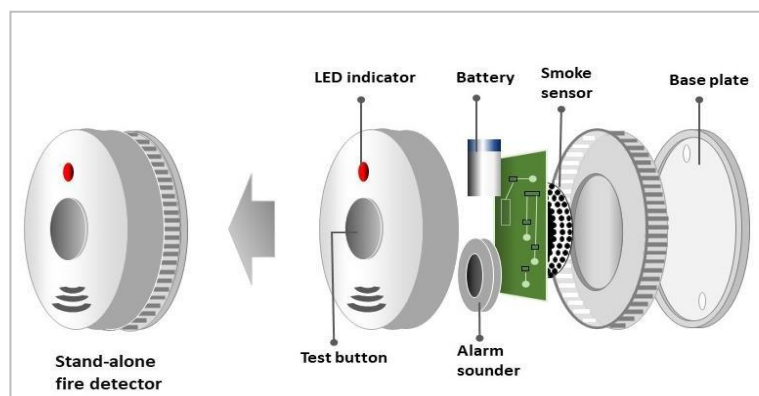


Figure 2 - Composition of a typical stand-alone fire detector

5. Installation of stand-alone fire detectors is simple without the need of specific skill. It is normally fitted to a mounting plate, which can be easily attached to the surface of the ceiling for operation by adhesive tapes or screws. Currently, the technology of stand-alone fire detectors is well developed and allows it to be integrated with the on-going trend of smart-home technology. Stand-alone fire detectors are commonly available in retail shops and online platforms and some of them manufactured with service life of 10 years, requiring no particular maintenance.



Figure 3 -A stand-alone fire detector being mounted onto mounting plate

Performance of Stand-alone Fire Detectors

In-house testing of stand-alone fire detectors

6. In order to evaluate the performance and functionality of stand-alone fire detectors available in the market, the FSD has conducted a series of practical tests on 22 different models of stand-alone fire detectors which are manufactured and tested in accordance with various international/national standards, such as BS EN 14604¹, ISO 12239², UL 217³, GB 20517⁴, BS 5446-2⁵, etc., for having them being tested in simulated building fire scenarios. Testing results showed that all the devices performed satisfactorily, i.e. smoke detectors could identify the presence of smoke and heat detectors could recognize the increase of temperature due to rise in room temperature, in that they can timely give alarm warning at a sound level pursuant to the relevant standards.



Figure 4 – In-house testing of various stand-alone fire detectors

Mainland and Overseas experiences

7. In the Mainland, the adoption of stand-alone fire detector is regarded as a fire safety preventive measure and stand-alone fire detectors have been encouraged to be provided in different premises. Overseas experiences, including Singapore and the United States⁶, have been stepping up efforts to promote the wider use of stand-

¹ BS EN 14604:2005, *Smoke alarm devices*, British Standards Institution, London, UK, 2005 edition.

² ISO 12239, *Smoke alarms using scattered light, transmitted light or ionization*. International Organization for Standardization, Switzerland, 2010 edition.

³ UL 217, *Standard for Safety for Smoke Alarms*. Underwriters Laboratories Inc, USA, 2010 edition.

⁴ GB20517 – 2006, “獨立式感煙火災探測報警器”. Standardization Administration of the People’s Republic of China, China, 2006 edition.

⁵ BS 5446-2:2003, *Fire detection and fire alarm devices for dwellings – Part 2: Specification for heat alarms*. British Standards Institution, London, UK, 2003 edition.

⁶ In the United States, stand-alone fire detectors are generally required in residential settings.

alone fire detectors in domestic premises. In Singapore, the installation of stand-alone fire detectors (where they named it as “Home fire alarm devices”) for new residential premises has become mandatory since 1 June 2018. While existing residential premises are required to install stand-alone fire detectors during the course of specified fire safety works, the homeowners are strongly encouraged to install such devices for their own safety. According to the National Fire Protection Association’s report⁷ issued in January 2019, the risk of dying in reported home structure fires is 54% lower in homes with working smoke alarms (a kind of fire detector) than in homes with no alarms or none that work. In terms of popularity, stand-alone fire detectors are also low-priced and commonly available at supermarkets or on-line stores in overseas countries.

Considerations of the Use of Stand-alone Fire Detectors

Community fire safety enhanced

8. It is not uncommon for a fire to occur without giving early warning to, or being noticed by the occupant(s), and unfortunately, loss of life or severe damage to property would be resulted. As a matter of fact, devastating fatal fires could be prevented if they are detected at their incipient stage, particularly in circumstances where people fall asleep in their premises when fires occur. Notwithstanding most of the buildings are installed with fire service installations or equipment (“FSI”) pertinent to statutory requirements as stipulated in the Code of Practice for Fire Service Installations and Equipment (Code of Practice) published from time to time by the FSD, installation of fire detectors may not be required in the interior of premises.

9. By taking the advantages of installing stand-alone fire detectors for the purpose of fire protection, it is already adopted as one of prescribed fire safety requirements in some licensed premises where the installation of traditional fire detection system is not feasible. With a view to enhancing the fire safety in other premises, particularly in domestic units, it is considered that adoption of stand-alone fire detectors is the most pragmatic and cost-effective measure from the fire safety protection perspective.

The extant regulatory control on stand-alone fire detector

10. In Hong Kong, under the extant legislative regime, fire detectors, including stand-alone fire detectors are defined as “Fire Service Installation or

⁷ Marty Ahrens, “Smoke Alarms in U.S. Home Fires”, National Fire Protection Association (NFPA), p.1 (2019)

Equipment”. Hence, the installation, maintenance, inspection or repair of stand-alone fire detectors shall engage a Registered Fire Service Installation Contractor (“RFSIC”). In addition, it also requires the owners of stand-alone fire detectors to keep such detectors in efficient working order at all times and have such detectors inspected by an RFSIC at least once in every 12 months. In this regard, owners of stand-alone fire detectors are required to bear the cost incurred for engaging an RFSIC to deal with stand-alone fire detectors, which may not be proportionate to the price of a stand-alone fire detector. As such, the extant regulatory control over the stand-alone fire detectors may hinder the intention of the public of enhancing the fire safety on their own volition.

Way Forward

Benefits to the public and Legislative amendment

11. The FSD plans to encourage voluntary use of stand-alone fire detectors by way of legislative amendment, so that the public will no longer be required to engage an RFSIC for the installation, maintenance, inspection or repair of stand-alone fire detectors which are installed upon the premises owners/occupiers’ own volition (i.e. not installed in accordance with relevant laws, licensing requirements or Code of Practice). Upon legislative amendment, the owners of such devices will be exempted from the statutory duty of keeping it in efficient working order at all times and having them inspected by an RFSIC at least once in every 12 months.

12. Technology of stand-alone fire detector is well developed that it is generally maintenance-free. Typically, a stand-alone detector is built-in with a test button for checking whether it works normally. Some of them have a service life of ten years without the need to replace battery. A low battery warning buzz is also a typical feature to alert users for replacement of battery or detector in which battery is built-in and cannot be replaced. At present, stand-alone fire detectors are available for sale at online platforms or at retail shops selling home appliances in Hong Kong.

13. Above all, such exemption would encourage the public a wider use of stand- alone fire detectors. The major benefit of such use is the early detection of fire and early warning to building occupants. The earlier the fire gets detected, the faster the firefighters will be informed and further, they will work to stop it. The stand-alone fire detectors provide occupants with 24/7 protection throughout the day, in particular at night when they are fast asleep.

14. For the purpose of promoting the use of stand-alone fire detectors, the FSD has conducted a series of briefing sessions for various stakeholders, such as FSD

Connects for members of the construction industry, the Hong Kong Federation of Insurers, the Hong Kong Institution of Engineers, the Institution of Fire Engineers (HK Branch), the Association of Registered Fire Service Installation Contractors of Hong Kong, etc. While more briefing sessions are being arranged, promotional materials are also being prepared and will be uploaded onto FSD's website for the public's reference in due course.

Enquiry

15. Should you require further information or amplification, please feel free to contact Policy Division of Licensing and Certification Command of Fire Services Department by email: sso_pol_4@hkfsd.gov.hk or by phone at 2733 7556.

Fire Services Department

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