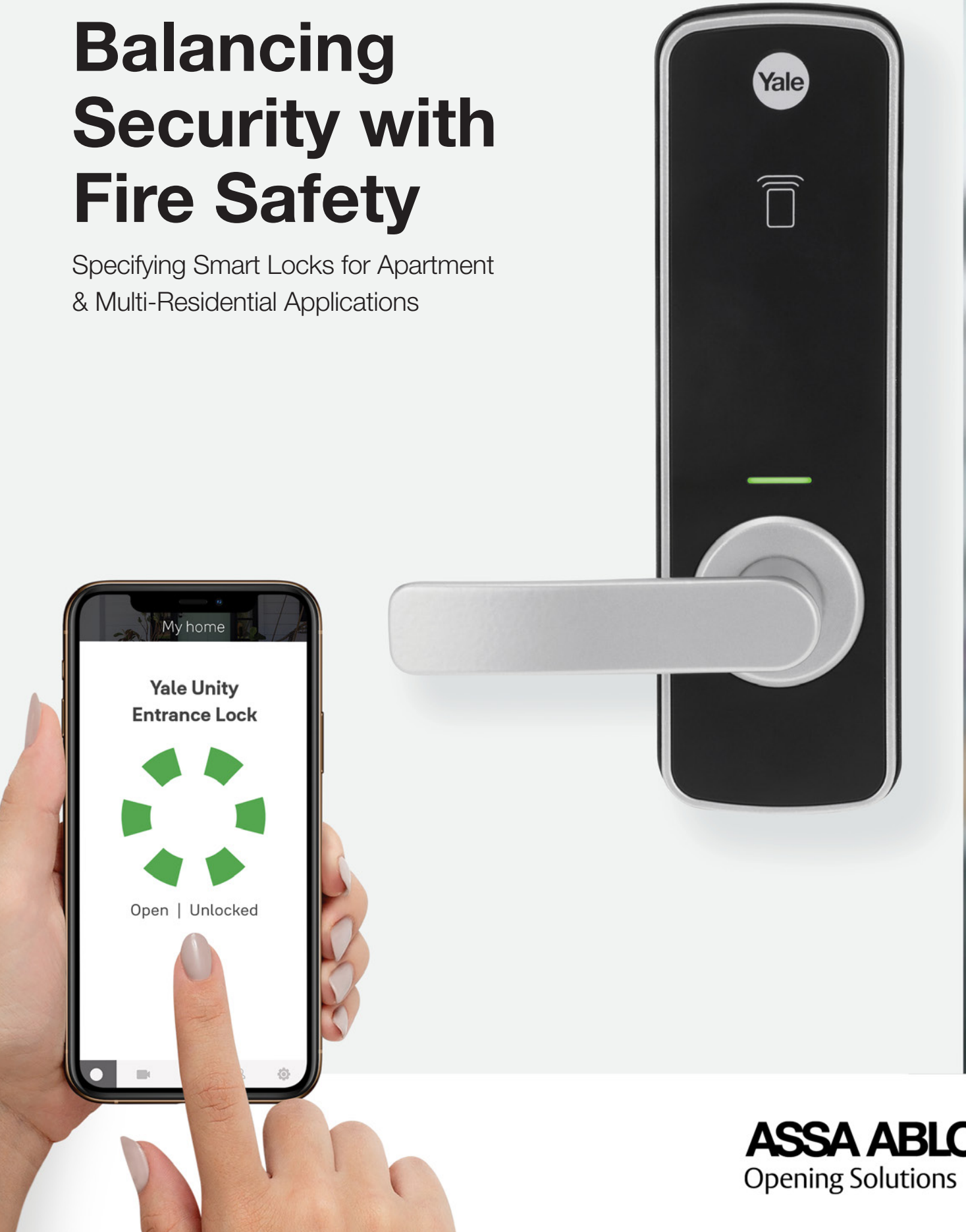
Balancing Security with Fire Safety

Specifying Smart Locks for Apartment & Multi-Residential Applications



ASSA ABLOY
Opening Solutions

INTRODUCTION

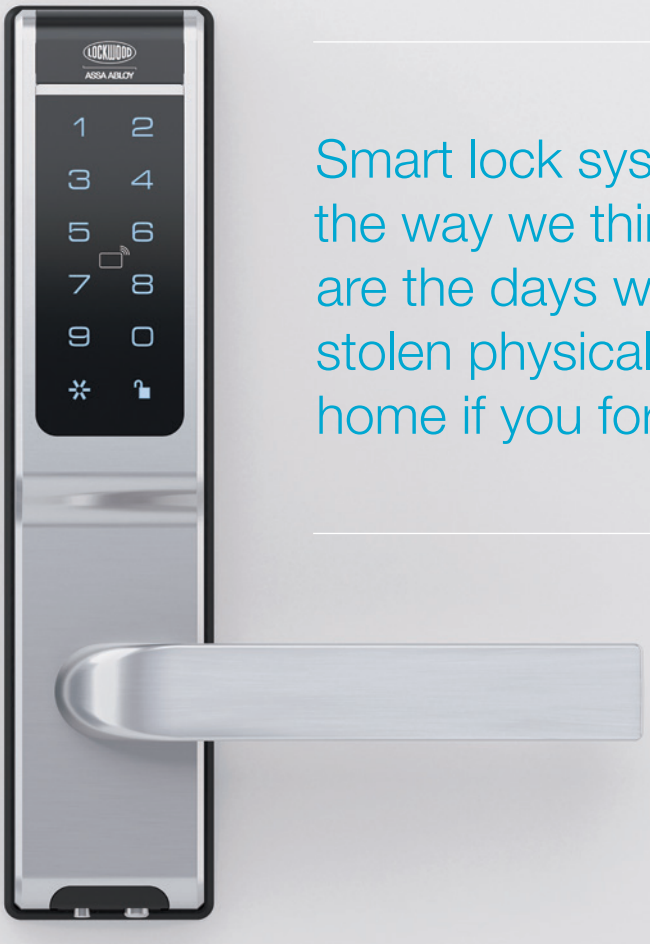
Protecting their homes is one of the typical Australian homeowner's highest priorities, so it is no surprise that smart locks have grown in popularity. With our growing dependence on connected devices and the rising demand for 'smart' homes, consumers are turning to smart lock technology as a more versatile, convenient and secure alternative to traditional locks that puts the user in control, no matter where they are.

However, with every new innovation, there are some areas of uncertainty. There is growing concern that apartment owners are compromising fire safety by choosing smart locks that are not properly fire rated. Whether through a lack of knowledge or awareness of the variety of solutions on the market, finding a smart lock solution that addresses the fire rating requirements for fire and exit doors is proving to be a challenge in today's market.

After a spate of tower fires prompted greater scrutiny over the use of flammable building materials, Australia has developed some of the strictest fire regulations in the world. This includes requirements for most apartment front doors, depending on their classification within the National Construction Code (NCC), to be fire doors. Only fire-rated hardware may be fitted on fire-rated doors, including any locking systems.

It is the duty of care of architects, designers and specifiers to ensure that all fire and exit doors are safe, functional and code compliant. To bring all the security benefits of smart locks to new multi-residential builds, they must identify solutions that meet the functional needs of the building and its residents while also being fire rated and compliant with the NCC.

In this whitepaper, we examine the rise of smart locks and highlight their benefits over traditional locks. We then take a close look at the fire safety regulations impacting apartment and multi-residential applications, and how they impact your choice of smart lock solution.



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Lockwood Cortex Digital Door Lock - CTX530

THE RISE OF SMART LOCKS

A smart lock is a Wi-Fi or Bluetooth-enabled locking device that performs locking and unlocking operations on a door when it receives instructions from an authorised device using a wireless protocol. Advanced systems can monitor access and send alerts to the owner when different events related to the device occurs, and also log events to create a record of who has entered or exited the building and when.

The key components of a smart lock include a mechanical lock, which can be a simple lock such as a deadbolt, and the smart locking controller. Instead of a physical key, a smart phone or key fob is configured to provide the authentication needed through a wireless protocol to automatically lock or unlock the door. Modern systems can interface with other home devices including built-in security cameras, alarms, and intercoms to create a fully integrated security system.

The rise of the Internet of Things and connective technologies, as well as our increased dependence on smart phones, has driven smart lock market growth. This trend coincides with the growth of smart homes wherein internet-enabled home appliances and devices can be automatically controlled remotely using a networked device. The smart home market is projected to grow to 7.9 million users by 2026.[1]

Smart lock systems are transforming the way we think about security. Gone are the days worrying about a lost or stolen physical key, or rushing back home if you forget to lock your door. Smart locks can be programmed to lock automatically if left unlocked for a certain period. You can create unique lock codes for each authorised user, including family members and friends, for when you go away on holiday. Through the notifications feature, you have greater awareness of who has entered your home, which is particularly useful if you want to make sure the kids have made it home safely from school.

Importantly, smart locks prevent intruders from breaking in. It would be difficult and time consuming to hack the system undetected, which acts as a major deterrent for would-be burglars. In addition, smart lock systems can alert owners or even the police that there is a break in thus providing the ultimate peace of mind.

FIRE SAFETY REGULATIONS

An effective security system is only one aspect of designing a safe building. Another critical aspect – one emphasised in Australian building regulations – is protecting the building and its occupants during a fire event.

As tower fires such as Grenfell and Lacrosse have shown, the consequences of a high-rise building fire are devastating to property and can cause significant injury and death to residents. In order to limit these consequences, the NCC provides minimum requirements for fire-resisting construction that must be satisfied when building a new dwelling or converting an existing building.

The main objective of such provisions are to protect buildings from the spread of fire and smoke to allow sufficient time for the orderly evacuation of the building.

The type of fire safety measures required for a particular building will generally depend on the size, style and construction of the building. The building's class and rise in storeys determines the level of fire resistance particular elements of the building must achieve. Apartments are classified as 'Class 2' buildings under the NCC. Type A buildings are structures that have a higher risk, such as high rise, high occupant buildings, and therefore must be designed to be the most fire resistant.

In a fire event, the heat and pressure created by a fire will likely cause the non-approved lock, and in turn the door, to fail, allowing fire to quickly pass through.

FIRE-RATED DOORS

A fire door is a door that is designed to prevent the spread of fire from one section of a building to another. Used as part of a passive fire protection system, fire doors aid in the safe ingress and egress of fire fighters and occupants during a fire by separating the building into compartments and limiting the spread of fire and smoke within those compartments. To fulfil this purpose, fire doors must be fire rated, which means they must be fire resistant to the level specified by the relevant building regulations and standards.

In multi-residential buildings, fire doors are typically those that separate lots of property and common property, such as the front entry doors to an apartment. In most cases, the NCC requires an apartment fire door to have a Fire Resistance Level (FRL) of -/60/30. The FRL refers to a building element's rated ability expressed in minutes to resist a fully-developed flame in relation to three criteria: structural adequacy (stability and loadbearing capacity), integrity (ability to resist passage of flames and gasses) and insulation (ability to maintain a temperature below specified limits on the surface not exposed to fire). The dash (-) at the start of a door's FRL means that the door is non-loadbearing, but it is still expected to provide integrity and insulation protection.

Fire door assemblies, including the door leaf, frame and all hardware components, must comply with AS 1905.1:2005 "Components for the protection of openings in fire-resistant walls, Part 1: Fire-resistant doorsets", which is the construction standard for fire doors. This Standard requires that fire doors be tested in accordance with AS 1530.4:2014 "Methods for fire tests on building materials, components and structures, Part 4: Fire-resistance tests for elements of construction" to determine the FRL.

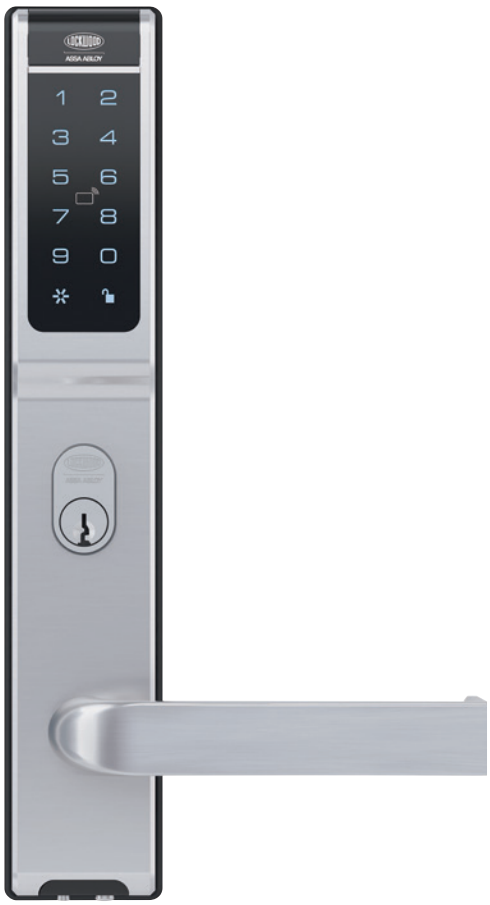
SECURITY OR FIRE SAFETY? WHY NOT BOTH

Serious issues with compliance can arise if modifications are made to a fire door that compromise its fire resistance. If you install non-fire-rated hardware on a fire-rated door, the entire door system will lose its fire rating, and in some cases, it will need to be replaced entirely. This applies to the installation of a lock that is not designed or engineered to withstand heat. In a fire event, the heat and pressure created by a fire will likely cause the non-approved lock, and in turn the door, to fail, allowing fire to quickly pass through.

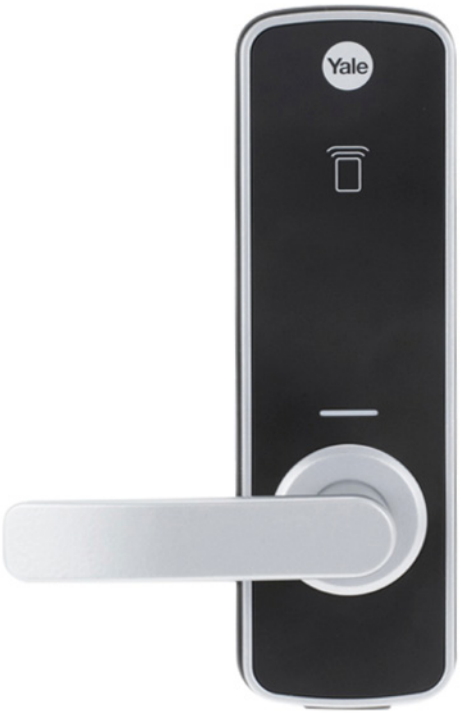
Accordingly, as with any lock used for a fire door, a smart lock system must be correctly fitted and compatible with the fire door, and fire rated. Australian standards require that locks on fire doors are rigorously tested by private and public certifying authorities before being attached to designated fire doors.

During the approval process for any fire door, the door assembly must be subject to the relevant testing under AS 1530.4:2014. Smarts locks that are demonstrated to meet the required FRL for apartment fire doors (i.e. FRL -/60/30) are permitted for use. When specifying a smart lock, you should check with the manufacturer of the door whether the smart lock is approved for the door type and size. If this information is not available, you can seek documentation from the lock manufacturer that the lock has been successfully tested on a fire door with a similar rating.

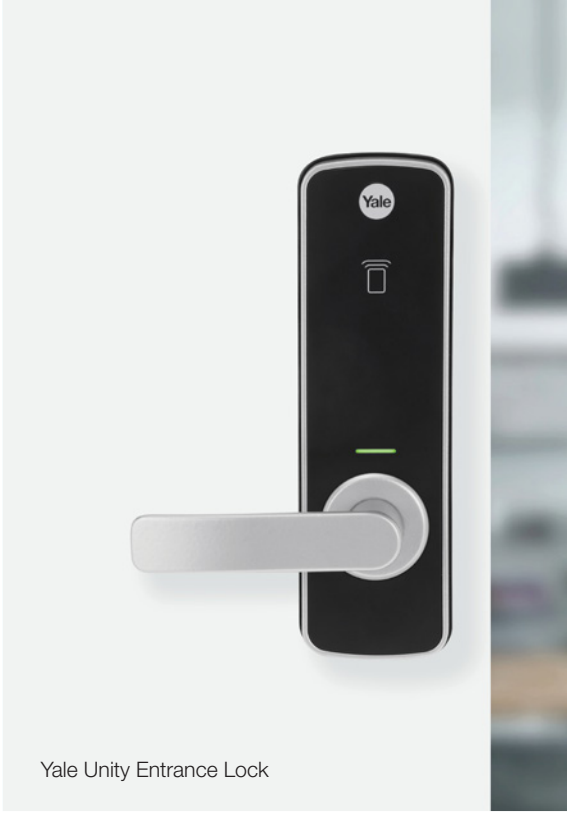
Before undertaking any work to modify the door with a smart lock, it is advisable to contact an accredited fire safety practitioner to ensure all safety standards are met.



Cortex CTX-3772



Yale Unity Entrance Lock



Yale Unity Entrance Lock

FIRE-RATED SMART LOCKS
ASSA ABLOY

ASSA ABLOY's strength lies in its brands, which include some of the best known and most trusted names in security. Each of their brands complements the others with its different strengths, allowing ASSA ABLOY to offer tailored solutions for all clients.

Lockwood Cortex

ASSA ABLOY's Lockwood CORTEX® is leading the evolution of Digital Door Locks. CORTEX® is a commercial-grade Digital Lockset that offers a standalone electronic access solution that can also be easily integrated to existing systems. Innovative locking coupled with the durability and quality that is synonymous with the Lockwood brand, certifies Cortex as the premium choice for intelligent locking.

Successfully tested up to 2 hours (depending on type of doorset) on fire door assemblies in accordance with AS 1905.1:2005, CORTEX® is the first Australian digital lockset to be fire rated for 530 latch and Lockwood mortice variants and always has free egress from the inside.

The Lockwood CORTEX® features ultra-smooth lever action provided by the ergonomic Lever: 77A. Compliant with AS1428.1:2009 (Disabled accessible complaint levers); CORTEX® has undergone severe vandal testing and has a strength rating of up to SL8.

Yale Unity Entrance Lock Fire Rated

The Yale Unity Entrance Lock Fire Rated has been successfully tested for 2 hours on fire door assemblies in accordance with AS 1905.1:2005.

Controllable by either the Yale Access App, key card or Yale Smart Keypad, the Unity Entrance Lock provides you with a range of options to control your lock. The Yale Access App allows you to lock and unlock your door, grant access to others and keep track of visitor access, all via your smartphone. Grant users one time access, access for a set period of time or a date range, avoiding any lost keys or having your keys stolen or copied.

Using varying technologies including Bluetooth, Wi-Fi and GPS as well as the Yale Access App, the auto-unlock feature unlocks your door as you approach. The door position sensor checks the status of the door and tells you if your door is securely closed and locked. This avoids inadvertently locking your door while the door is open.

The Unity Entrance Lock can be upgraded with the Yale Connect Bridge. The Yale Connect Bridge allows you to access your lock from wherever you are. Allowing you to lock and unlock, change PIN codes and lock settings remotely. The Yale Connect Bridge allows 'Works with' ability, integrating into your Google, Samsung or Alexa smart home hubs.

With the Yale Smart Keypad you can lock and unlock your door via PIN codes.

Meeting Australian lock standards AS 4145.2:2008, SL8 and D8, you can be sure that the Unity Entrance Lock meets your security needs.

References

1 Statista. “Smart Home.” Statista. https://www.statista.com/outlook/dmo/smart-home/australia (accessed 23 May 2022).

All information provided correct as of July 2022.

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