ASI

Wireless Fire Detection

System Overview & Product Catalogue

Contents

About ASI Oy Ltd

ASI Oy Ltd. is a fully autonomous and independent manufacturing company based in Savonlinna, Finland, specialising in the development and production of innovative wireless fire detection products. The company was founded in 2019 with the primary mission for the protection of Life and Property. This mission remains at the center of our core values.

We produce a wide range of wireless products for the commercial and industrial market sectors, including solutions for the safety of disabled people. Our products and technology have a proven record of performance, quality, and reliability with thousands of systems installed worldwide. We take pride in the fact that the Savonlinna facility was constructed and commissioned within a record time of 5 months including the launch of two SMD lines and a new testing laboratory conforming to EN 54 standards. The laboratory is fully equipped with all the necessary facilities for fire detection testing - certified smoke and heat test tunnel, acoustic anechoic chamber, light camera, radio channel and mechanical test rigs.

In 2020 the manufacturing facility was fully approved and certified by the world leading certification body - LPCB / BRE Global (UK), together with a range of our core wireless devices. Today ASI wireless fire detection devices are approved in 80 countries and are certified to various EN 54 standards by organisations including BRE/LPCB United Kingdom, SAI Global Australia and UAE Civil Defense.
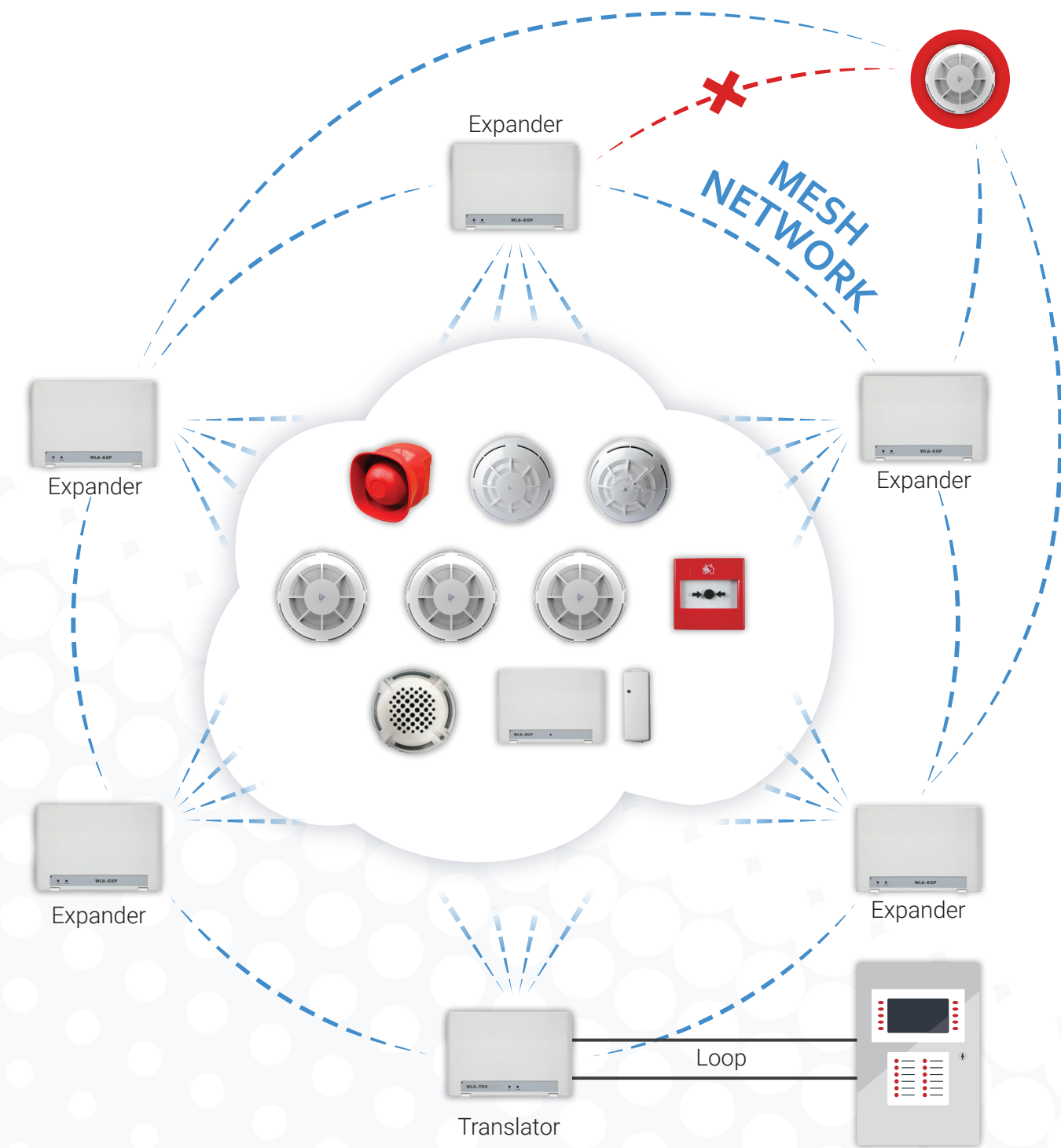
Founded in 2019

Located in Savonlinna, Finland

ISO 9001:2015 certified

1000 m² facility

2 surface mount assembly lines

Technology

How It Works

MESH NETWORK

Expander
Expander
Expander
Expander
Expander
Translator
Loop

Use Wireless for Any Project

Public buildings

Medical facilities

Office buildings

Transport infrastructure

Logistics and storage

Industrial facilities

Traditional wireless fire alarms usually have a limited range of use due to poor connection strength and small network coverage. But that's not the case with the ASI solution: a communication range of 1200 meters in free air ensures that even the thickest walls can be penetrated by wireless signals. The translator supports up to 126 expanders, which allows you to build a very robust and dense network. This means that the ASI system is suitable for almost all kinds of projects.

2000 Devices in One Building

Wireless systems are often challenged to operate reliably in large buildings, but that's not the case with the ASI solution. The communication protocol is designed in such a way that up to 2000 wireless devices can work in the same building. This means that you can install any number of translators and not have to worry if they are going to interfere with each other.

The translator module connects to the loop of a fire control panel, receives signals from wireless devices, and translates them to the panel via the Enhanced Systems Protocol. In order to expand the range of the network, expander modules are placed throughout the building. Signals from wireless devices can be received by the expanders, then travel through multiple expanders, eventually reaching the translator module.
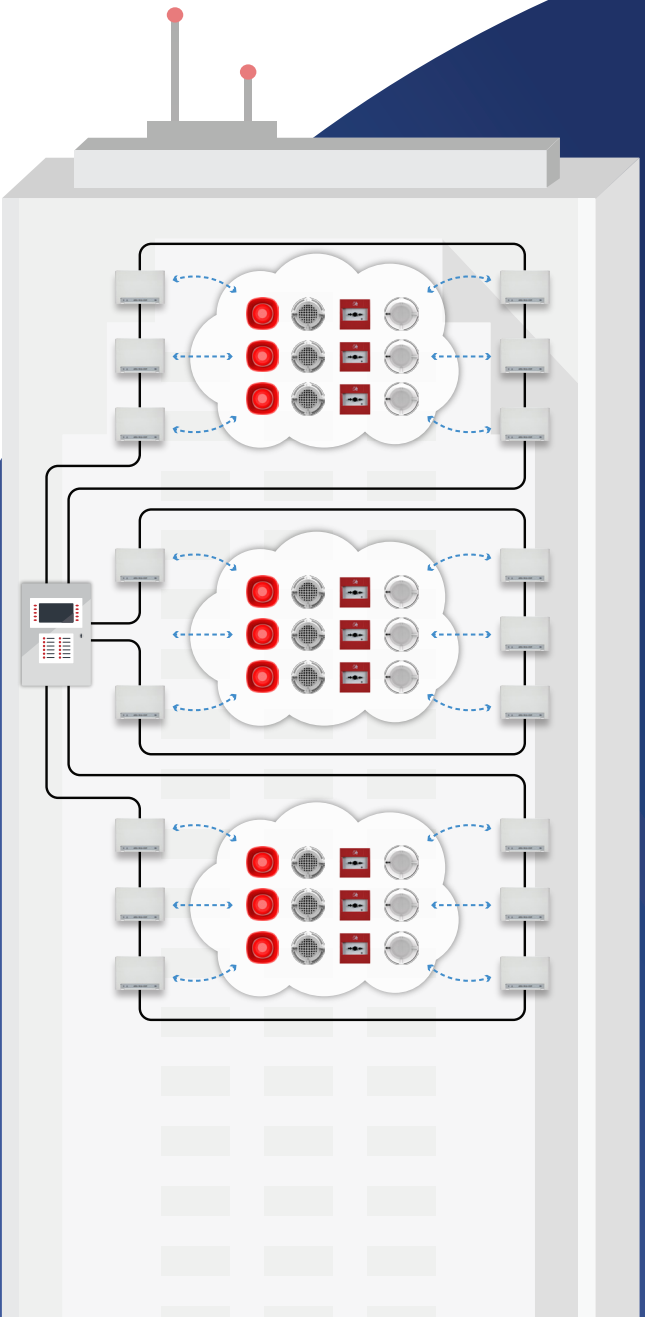
Mesh Network

Simple Design

Fast Installation

High Reliability

The wireless system uses the mesh network technology, which operates based on the following rules:
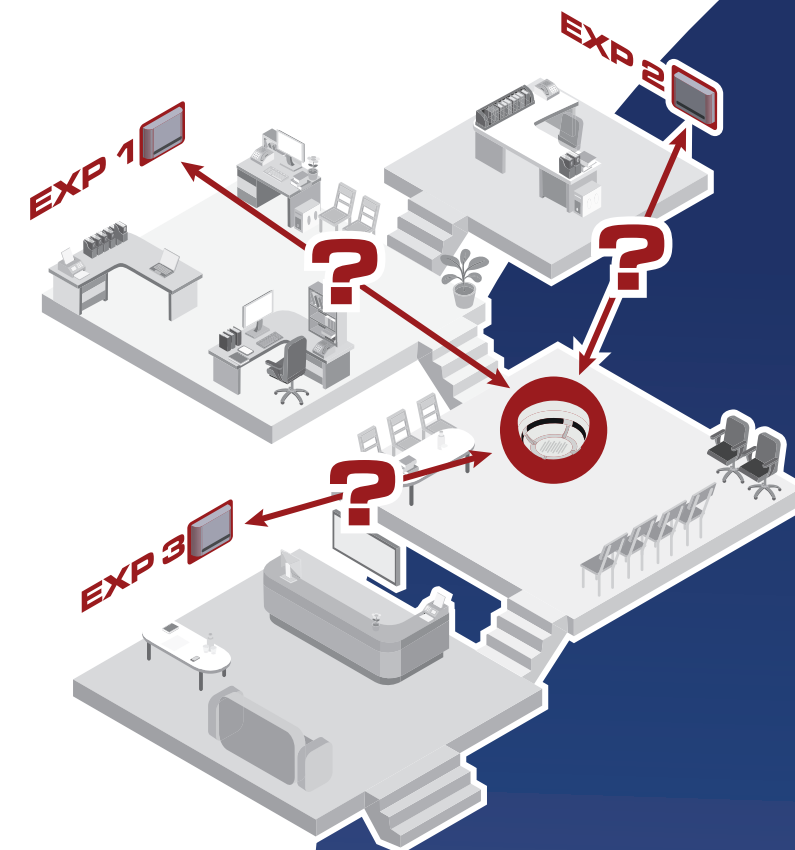
- each device automatically chooses its parent expander;
- expanders automatically form a network for delivering information to the translator

Wireless devices do not need to be assigned to a specific expander nor do the expanders need to be specified how to communicate with each other.

Dynamic communication path to the translator
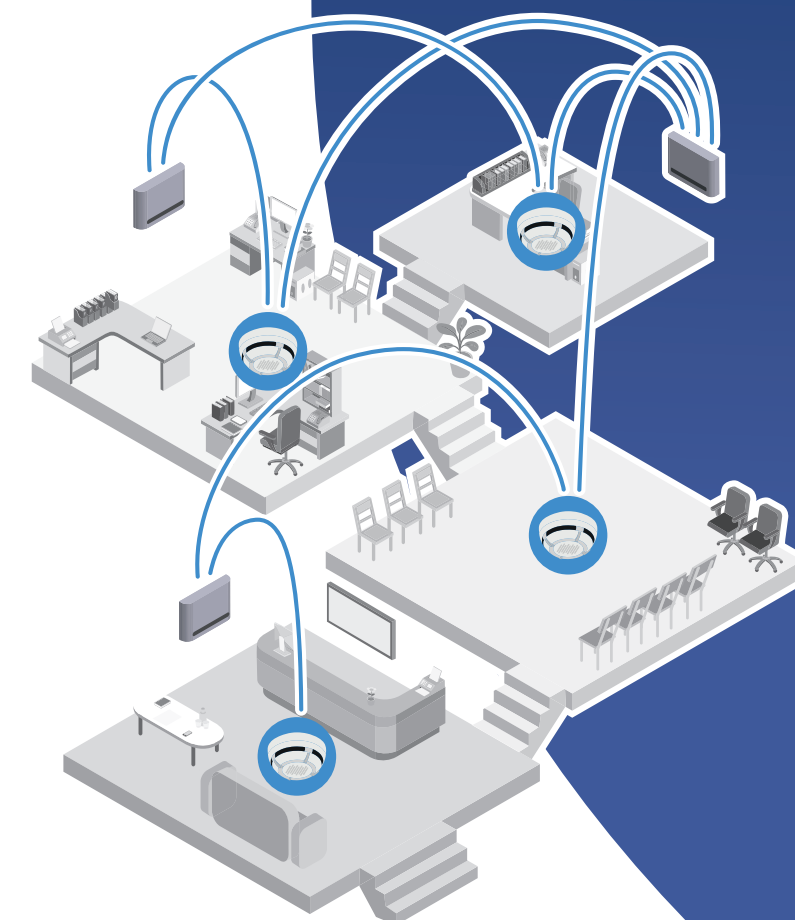

Slow and Complicated

When installing a previous generation wireless alarm, you might face a number of difficulties.

Primarily, you are going to have to decide which detector will be assigned to which expander. If some connections are weak you are going to have to reassign the detectors. This adjustment process can take a lot of time and work.
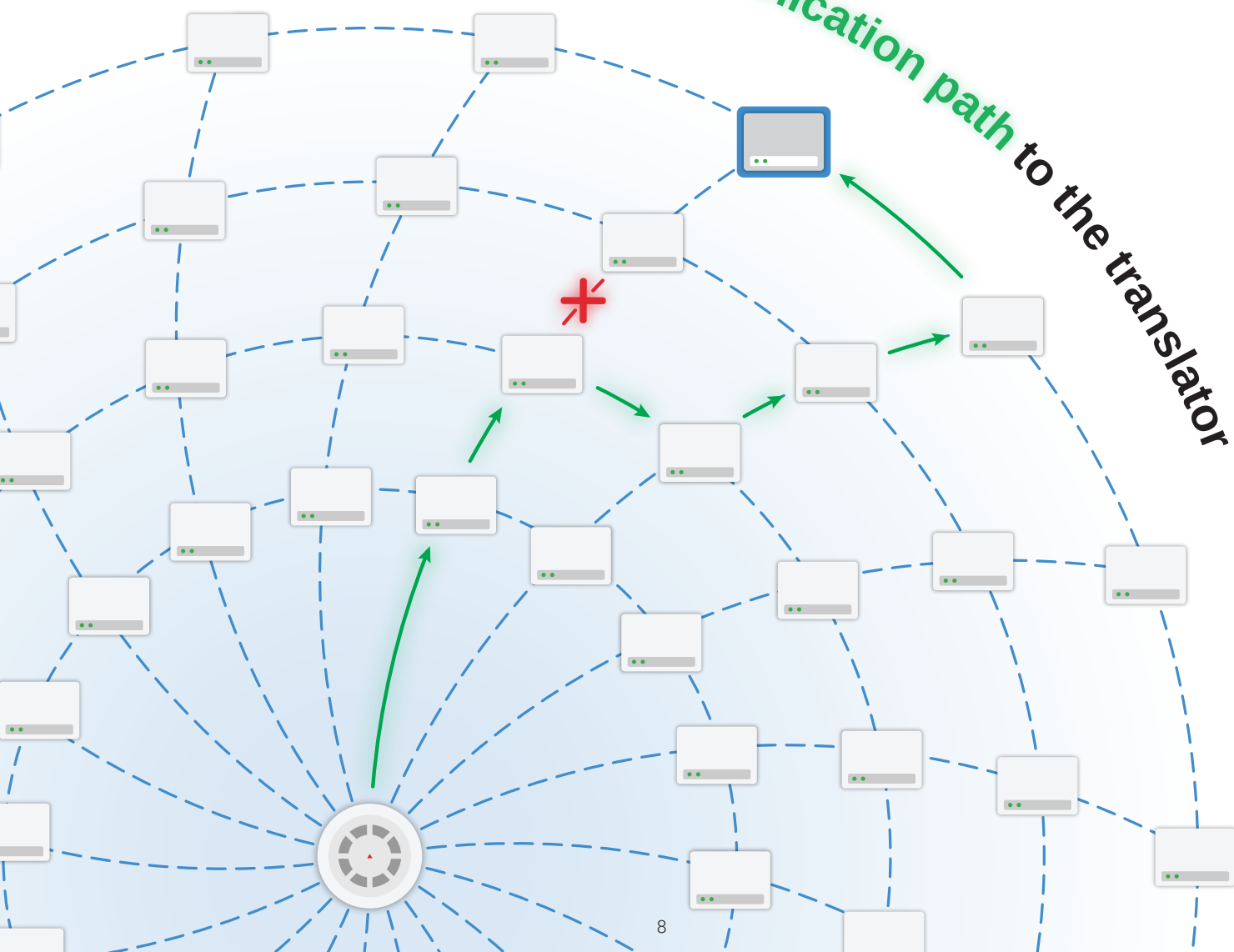
Mesh is the Answer

The advantage of a mesh network is that you don't have to manually specify the network topology. You only need to position the expanders throughout the building based on their connection radius, and the network will automatically arrange itself in the most optimal way. This significantly speeds up the installation procedures

Detectors & Expanders

The number of communication paths in the wireless system depends on how many expanders are in the detector's range, and how the expanders are interconnected with each other. With every expander added to the network, the variability of communication routes from a detector to the translator grows exponentially. This is part of what makes the wireless system so robust and reliable.

1 expander
2 paths

2 expanders
5 paths

3 expanders
16 paths

4 expanders
65 paths
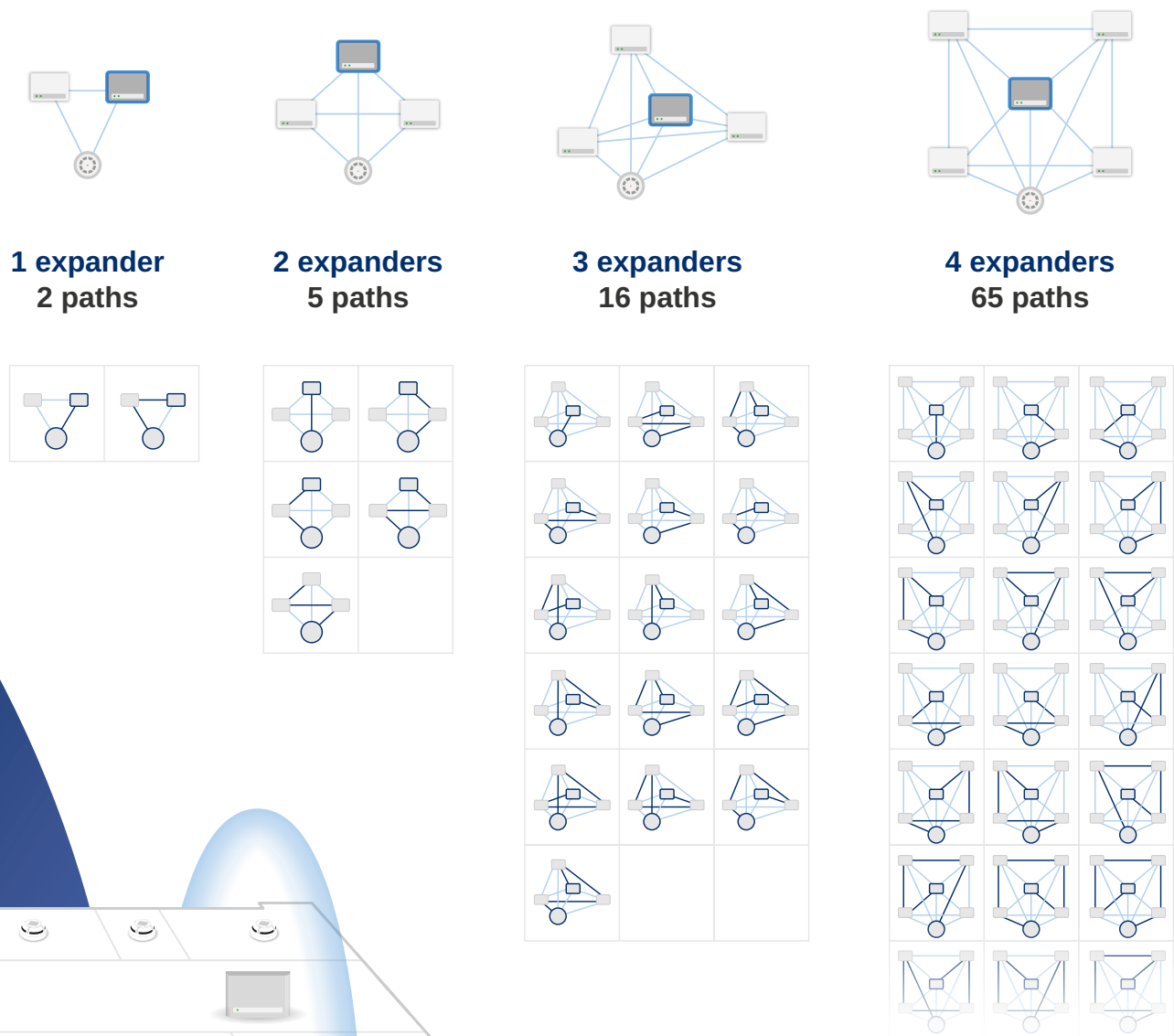
The antenna pattern of an expander is spherical, which means that it can connect to devices one floor below or above it. Since there is a lot of overlap in communication areas of the expanders, most devices in the building have multiple backup connections to the network.
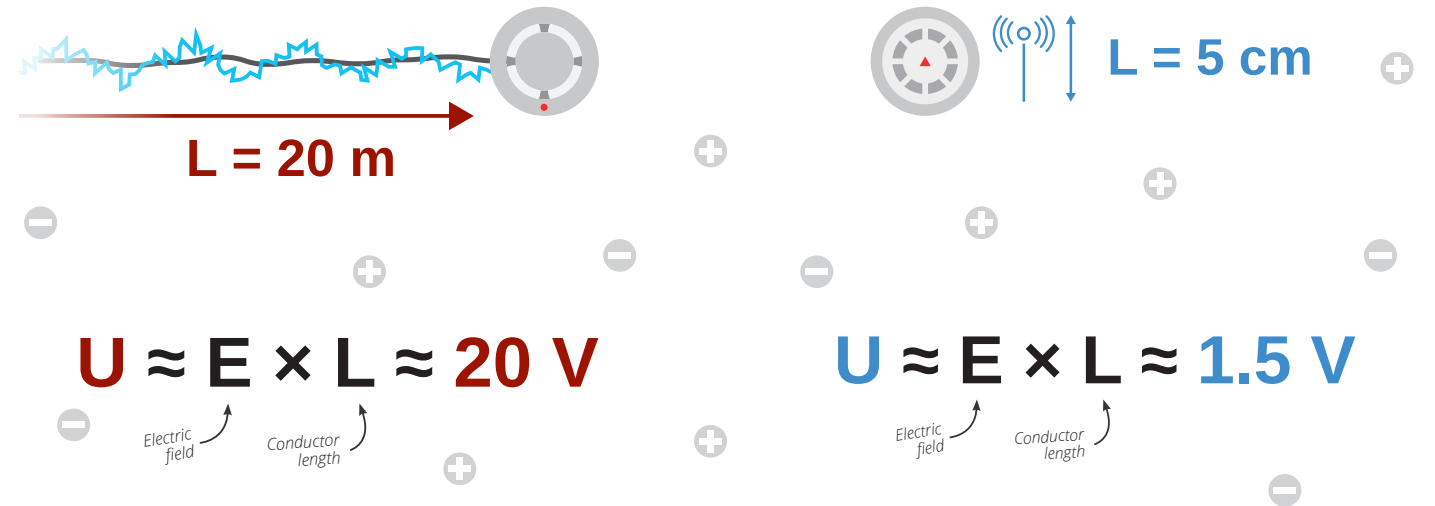
Reliability

In addition to multiple communication paths, a detector can also send its signals via 6 different frequency channels. And expanders have two orthogonal antennas to improve reception of signals with different polarization. This provides an extra level of communication reliability.

2
orthogonal antennas

6
frequency channels

127
communication paths
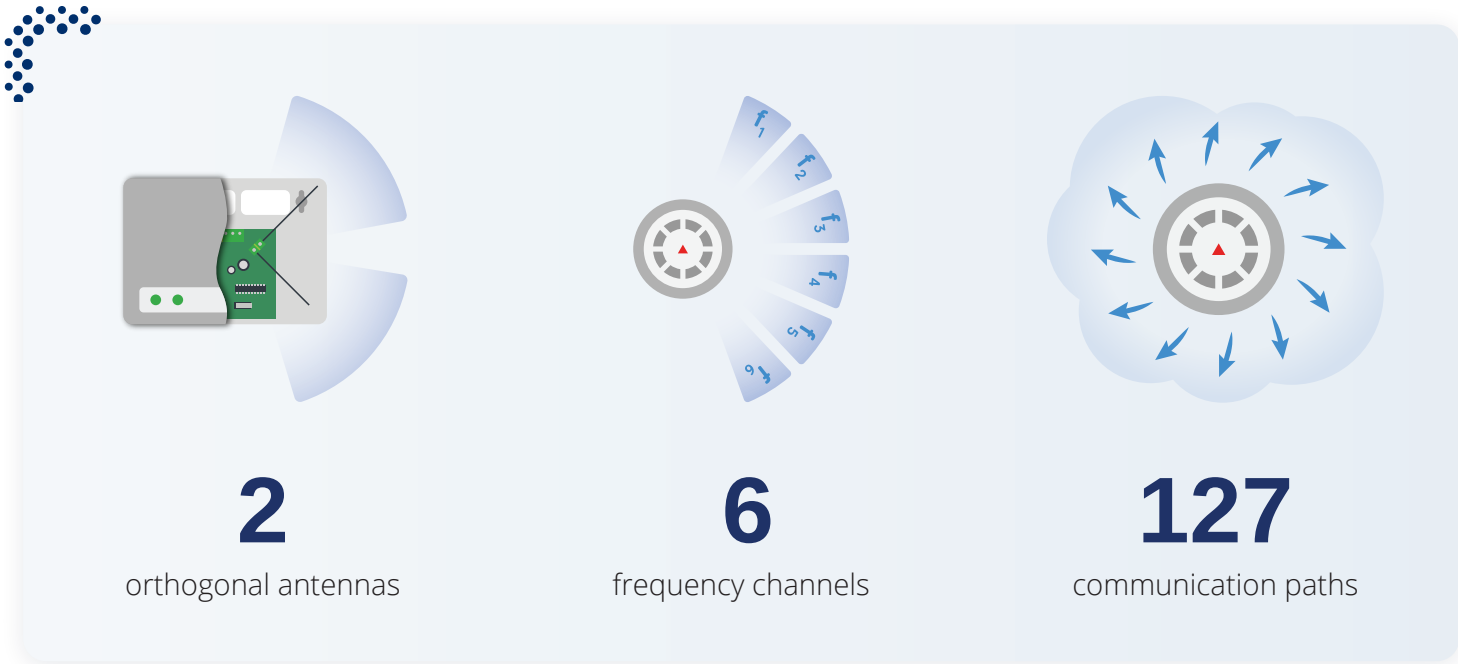
False alarms

The cables in wired fire systems, can act as an antenna for all sorts of electromagnetic interference. These signals can reach the very sensitive photodiodes and cause the detector to generate a false alarm.

However, the impact of the interference depends on the length of the electrical conductor. Since the only exposed conductor in a wireless device is a very short antenna, the impact of the interference will be negligible.

L = 20 m

L = 5 cm

$$U \approx E \times L \approx 20\ V$$

Electric field   Conductor length

$$U \approx E \times L \approx 1.5\ V$$

Electric field   Conductor length

Features

1 200 meters

Communication range of 1200 m. between an expander and a device. Between two expanders the distance can reach 2 km.

126 devices

126 devices or expanders in one network. Multiple networks can work in the same building

10 years

In normal conditions, the detectors can work for up to 10 years on one set of batteries.

3 seconds

Sounders and other alarm devices activate almost immediately when a fire detector is triggered.

10-year Battery Life

The 10-year battery life in ASI detectors was achieved by optimizing the communication technology, specifically making the effective radiated power very low, the active period brief, and the intervals between packages sufficiently long.

Low power **+** Short transmission **+** Long interval **=** 10 Years
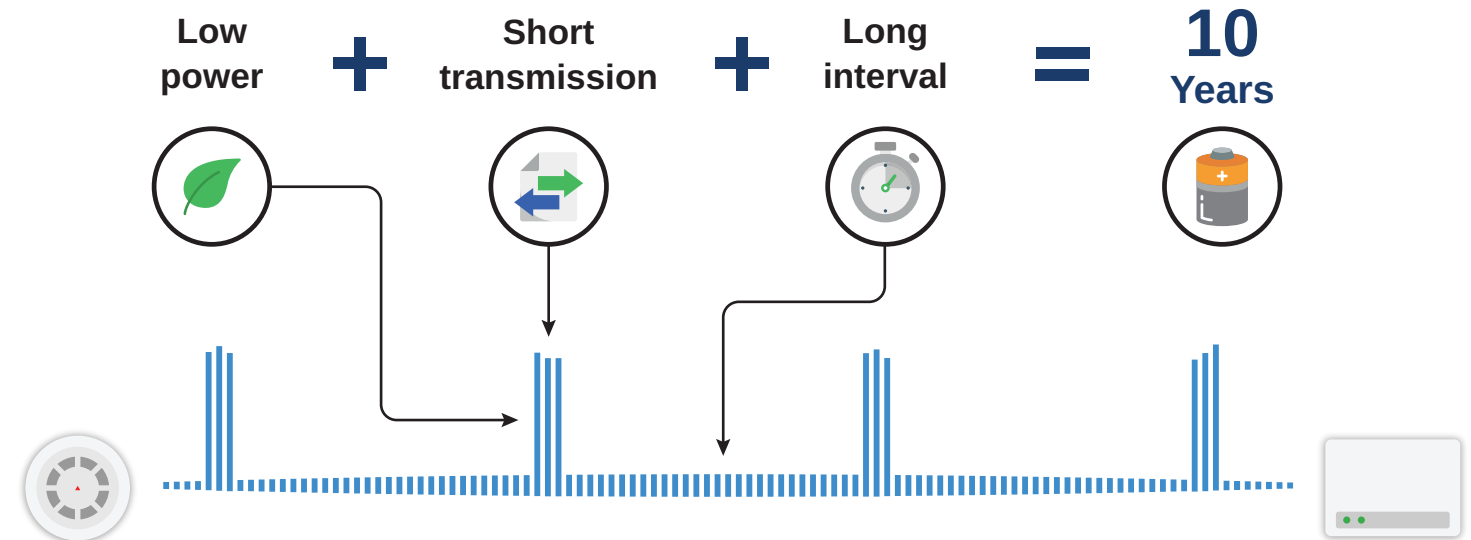
New battery technology

Modern PCB components

Optimized communication

The ASI system utilizes all of the latest developments in the battery industry, which has been significantly boosted by the recent rise of the electric car segment. Plus, all devices are manufactured with the most advanced and power efficient components on the market. These factors, along with the optimized communication protocol is what makes it possible for the ASI equipment to have a 10-year battery life.
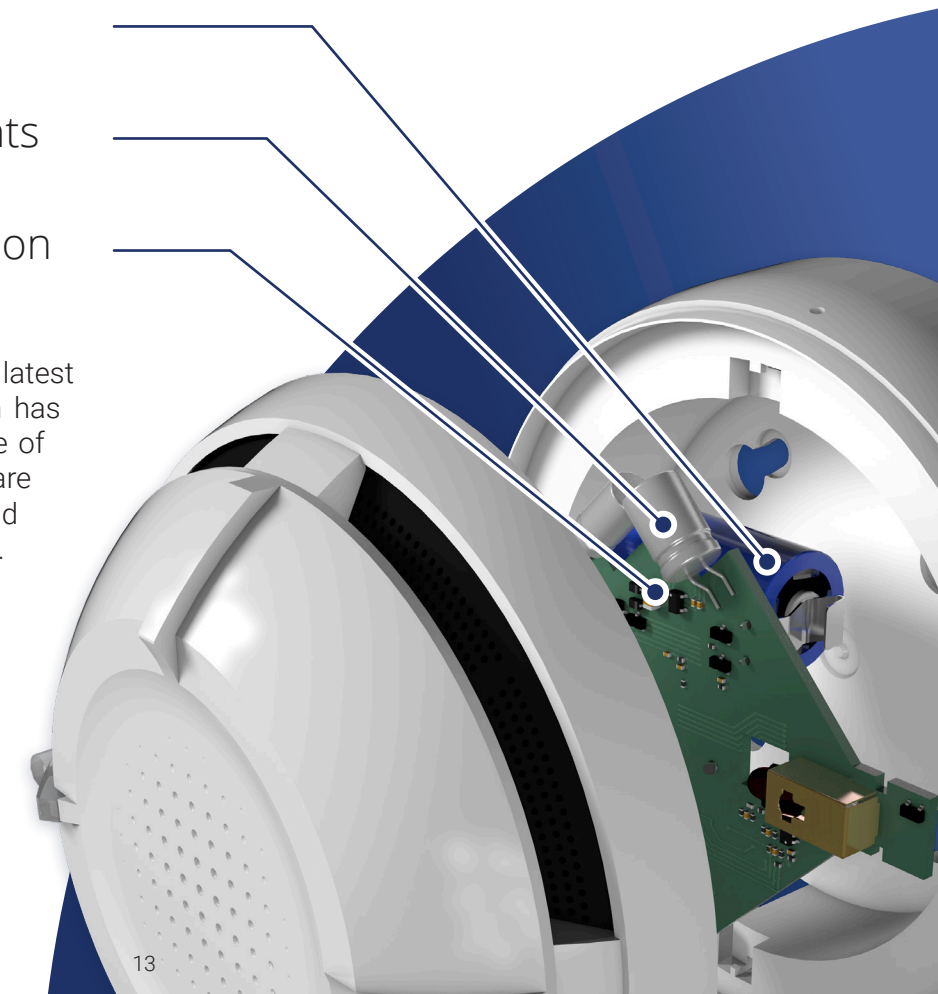
Product Range
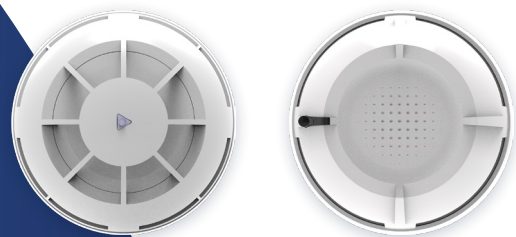
Fire detectors

WL8-O, WL8-H, WL8-OH

Smoke, heat and multi-criteria detectors. Patented smoke chamber design. Adjustable sensitivity.

Fire detectors with built-in sounders

WL8-OS, WL8-HS

Smoke and heat detectors with a 98 db sounder. Cheaper and faster than installing two seperate devices.
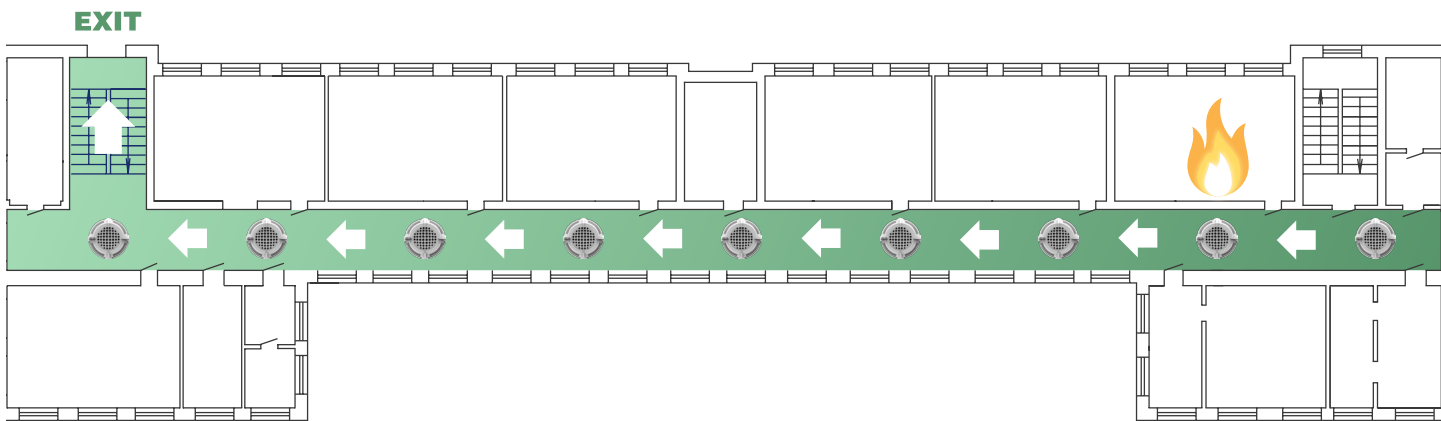
Manual call point

WL8-CP

A wireless call point with a proven and reliable design.

Smoke detector with built-in voice alarm and VAD

WL8-OV

The flagship device from ASI and a unique product on the market. Several WL8-OV detectors can be programmed as a dynamic evacuation system.

EXIT

1 Fire is detected in the building

2 The WL8-OV devices initiate evacuation with a warning message

FIRE!

3 The devices one-by-one generate a short multi-frequency sound signal along with a light flash, thus showing the way to a safe evacuation exit

4 The system can reverse direction and activate independently on different floors, allowing for a adaptive evacuation strategy
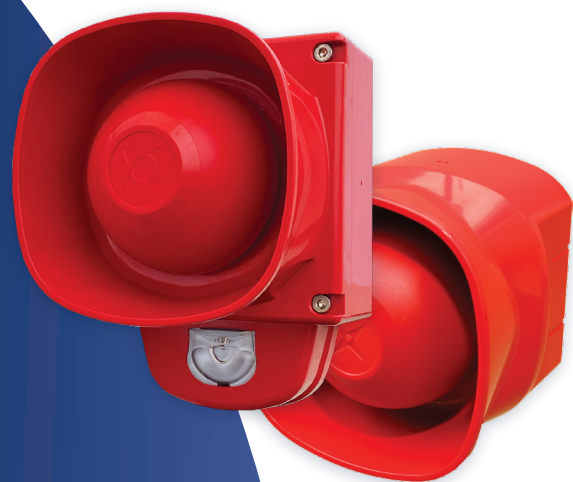
Sounders

WL8-SND, WL8-SNDV

Two versions: with and without VAD.
Selectable tones. Sound output 93 dB

Output module

WL8-OUT

Wireless output module rated for 8A.
Additional mounting box available.

Base sounders

WL8-BS, WL8-BSV

Compatible with all ASI detectors.
Two versions: with and without VAD.
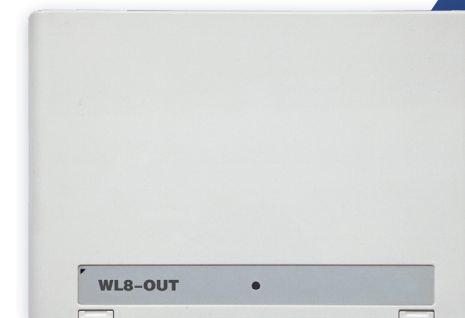
Remote indicator

WL8-RI

A wireless device for indicating the status of a fire
detector when it's installed out of sight.

Input module

WL8-IN

Wireless module with a single monitored
contact input. Additional mounting box
available

Translator & Expander

WL8-TRH, WL8-EXP

The building blocks of the wireless system.
Translator is always connected to the loop of the
control panel. The expander can be powed via the
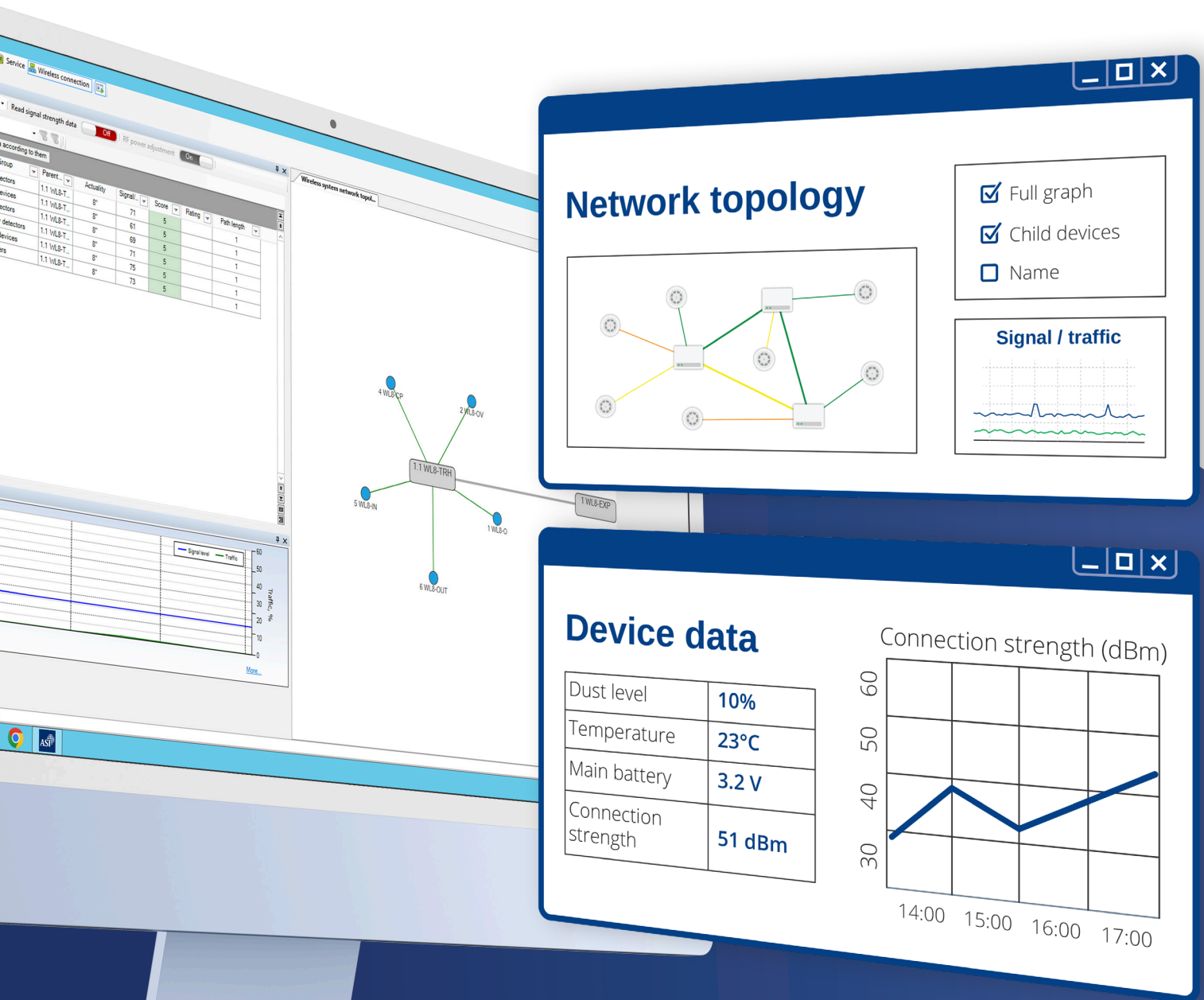loop or an external PSU.

The Software

The ASI software provides full control over the wireless system. You can see the various measurements that the wireless devices make, such as battery voltage, the dust amount in the smoke chamber or the air temperature in the room. Plus, the software allows you to analyze the network topology and connection strength with wireless devices in real-time. It is an essential tool for setting up the system and doing maintenance work.

Device data	Connection strength	System settings	Alarm test

Network topology

- ☑ Full graph
- ☑ Child devices
- ☐ Name

Signal / traffic

Device data

Dust level	10%
Temperature	23°C
Main battery	3.2 V
Connection strength	51 dBm

Connection strength (dBm)

14:00 15:00 16:00 17:00

## One-button Programming

Linking wireless devices to the network is incredibly easy in the ASI system. All you need to do is press one button on the device so that the translator will recognize it and establish the connection. Mesh network technology takes care of the rest: the device will connect to the expander with the strongest signal and find the communication path to the translator.

After the initial programming, you no longer need to press any buttons on the device – it can be mounted in place. Any settings you change can be applied "over the air". This makes it a lot easier to configure the system and make adjustments during setup.
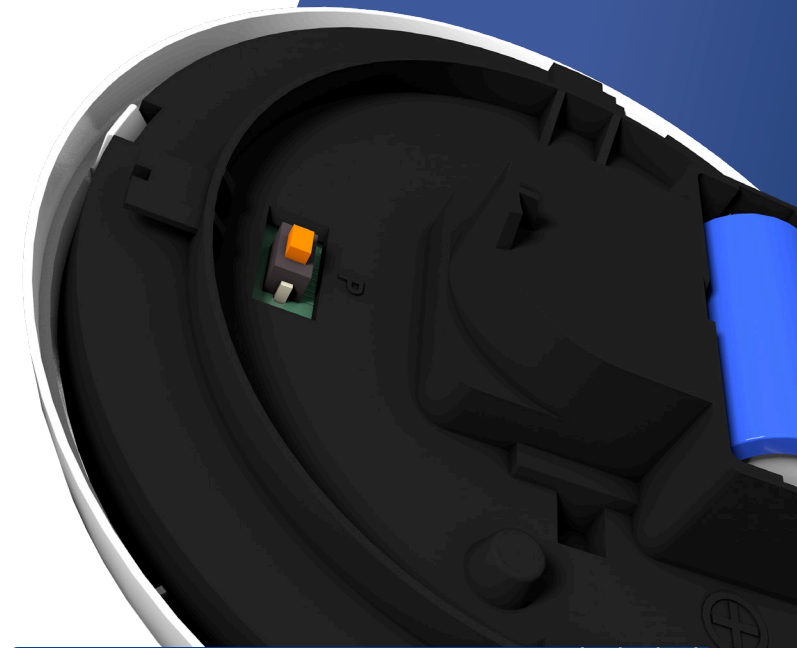
⚙ WL8-OV settings

Sensitivity	Normal	☑
Voice alert volume	High	☑
Stop alert after	1 hour	☑
VAD	On	☑
LED indication	On	☑
Comment	'Room 237'	

Built-in Controls

It is not strictly necessary to use a computer to set up the system. A lot of the software features are also available through the built-in display on the translator PCB. This hardware interface will allow you to perform basic tasks, such as adding or removing wireless devices, changing settings, checking the connection strength or device data, and generating test alarms. It is a good time saver, although the ASI software is a lot more comprehensive and scalable approach to using wireless in your projects.
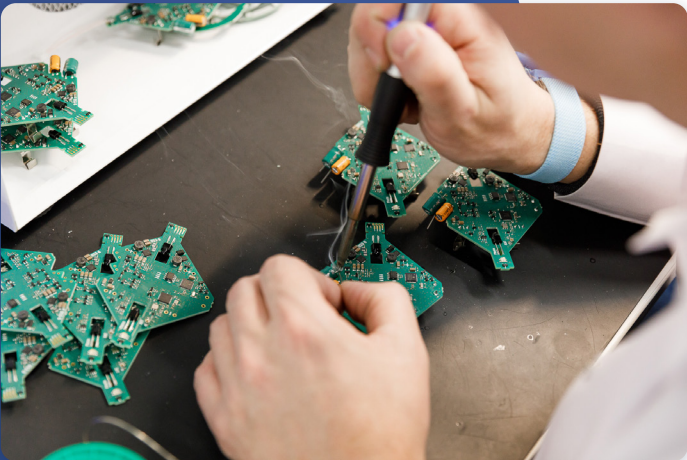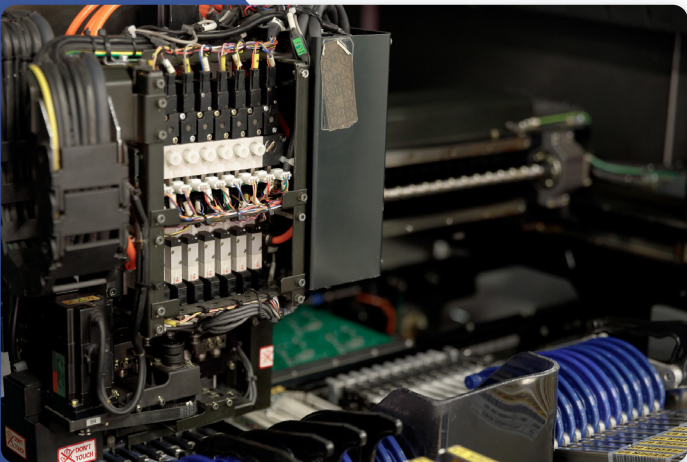
Approvals

Factory Approvals

The factory successfully passed the rigorous audits of European Lost Prevention Certification Board - BRE Global UK and awarded the highly recognised LPCB mark. The company's quality management system was certified according to the requirements of ISO 9001:2015.

Product Approvals

EN-54

Equipment manufactured by ASI was fully approved and certified by the world's leading certification board - LPCB / BRE Global (UK). In record time 13 core wireless products received approval to the mandatory standards required in the European fire detection sector.

DCD

The wireless system is accepted by the Dubai Civil Defense for the compliance of Fire and Life Safety Products.
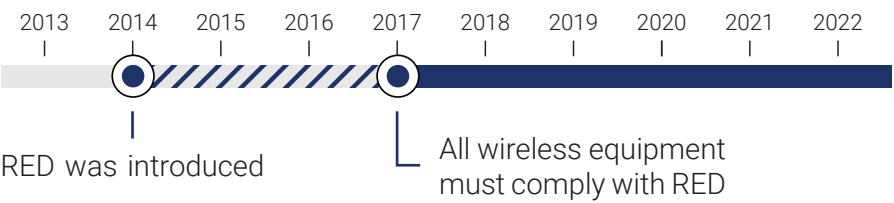
SAI

ASI wireless solution is certified to Australian fire safety standards AS 7240 by SAI Global Australia. The certification is recognized not only in Australia but in the Oceania region countries as well.

RED 2014/53 EU

Radio equipment directive is a relatively new European legislation, which regulates the market of wireless equipment. Wireless alarms are also covered by the scope of the directive and older systems have to go through reassessment to be legaly sold in the EU.

The ASI system was one of the first wireless alarms to receive RED certification. The certificates were granted in December of 2019 by Element Materials Technology – a british notified body.

2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022

RED was introduced

All wireless equipment must comply with RED

Nowadays interest in wireless technologies is exponentially growing thanks to the concept of the Internet of Things, which became a technological wave in building management, automation, security, and occupational safety. It is widely believed that RED was introduced in an effort to regulate this booming market.
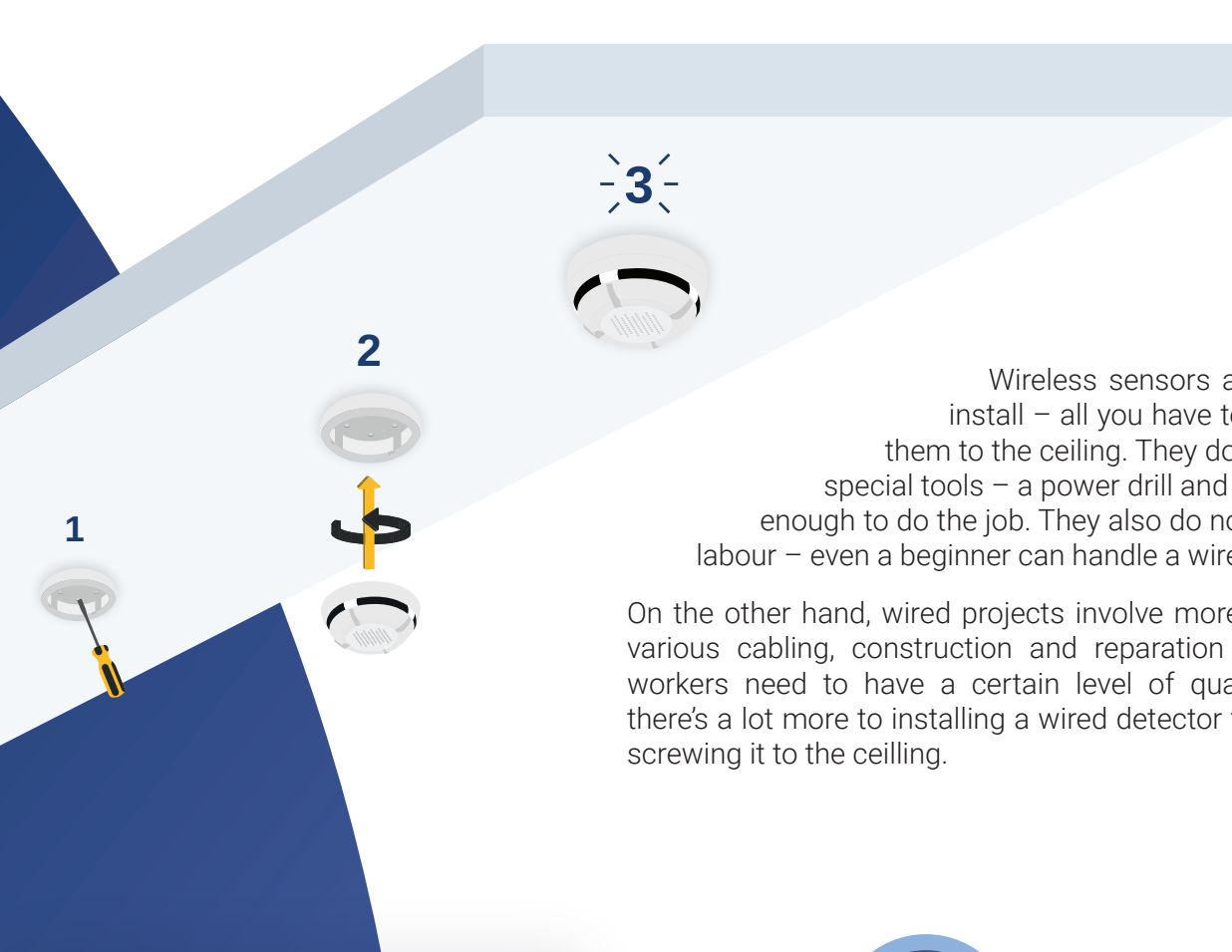
RED certification means that the ASI wireless system is held up to the same level of standard as any other radio equipment, even including more advanced and widespread technologies, such as LoRa WAN, BLE, Wi-Fi, and others.

Availability

The wireless equipment from ASI has the approvals to be distributed and installed in 80 different countries across several continents.

Our partnership with the world's leading brands in fire safety allows us to provide excellent client support on a global scale and make reliable, easy-to-use fire protection technologies available to anyone.

Europe
Middle East
India
Australia
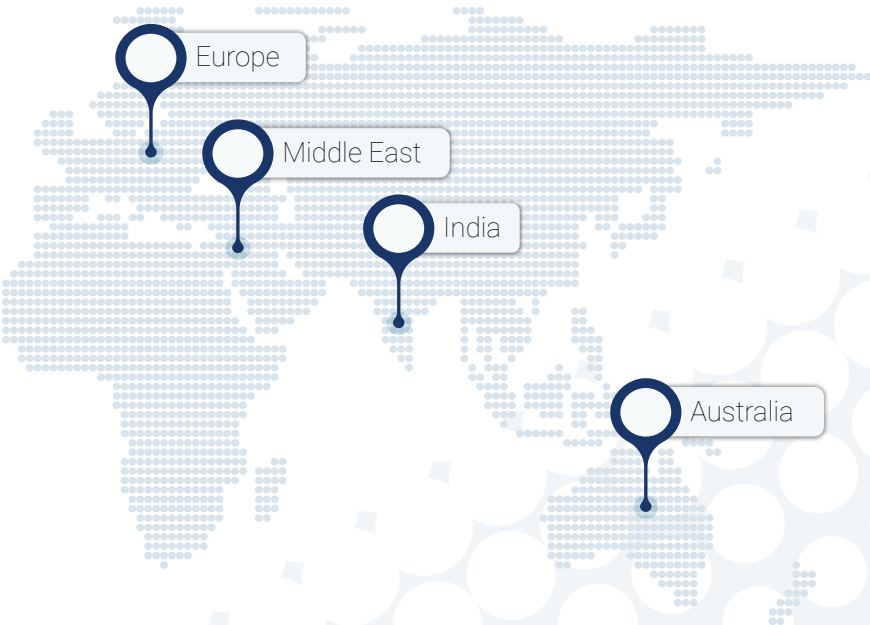
Approved in 80 Countries

|			
Argentina	Armenia	Australia	Austria
Azerbaijan	Bahrain	Brazil	Bulgaria
Cyprus	Czech Republic	Denmark	Egypt
Fiji	Finland	Georgia	Gibraltar
Greece	Hong Kong	Hungary	India
Indonesia	Iran	Iraq	Ireland
Israel	Italy	Jordan	Kasakstan
Kashmir	Kenya	Kiribati	Kuwait
Kyrgyzstan	Libya	Lithuania	Malaysia
Malta	Marshall Islands	Micronesia	Moldova
Mongolia	Nauru	Netherlands	New Zealand
Nigeria	Norway	Oman	Pakistan
Palau	Papua New Guinea	Philippines	Poland
Portugal	Qatar	Samoa	Saudi Arabia
Singapore	Slovakia	Slovenia	Solomon Islands
South Africa	Spain	Sri Lanka	Sweden
Switzerland	Syria	Taiwan	Tajikstan
Thailand	Tonga	Turkey	Turkmenistan
Tuvalu	UAE	Ukraine	United Kingdom
Uzbeckistan	Vanuatu	Vietnam	Yemen

Business

Simpler and Faster

Wireless sensors are very easy to install – all you have to do is to screw them to the ceiling. They do not require any special tools – a power drill and a screwdriver is enough to do the job. They also do not require skilled labour – even a beginner can handle a wireless detector.

On the other hand, wired projects involve more manpower for various cabling, construction and reparation work. And the workers need to have a certain level of qualification, since there's a lot more to installing a wired detector then just simply screwing it to the ceiling.

20 m²

Wireless
3-minute installation

Wired
45-minute installation
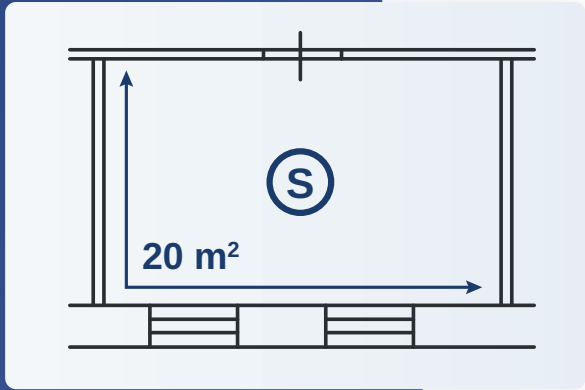
3 minutes is enough to install a wireless detector, and a couple of days is enough to complete the whole project. The system can even be pre-programmed before installation, which further minimizes the time spent on site.

In contrast, about 45 minutes per room is needed to install a wired system, and the projects can drag on for weeks because of various complications associated with drilling the walls, installing trunking, or wiring devices to the loop.

The Real Cost
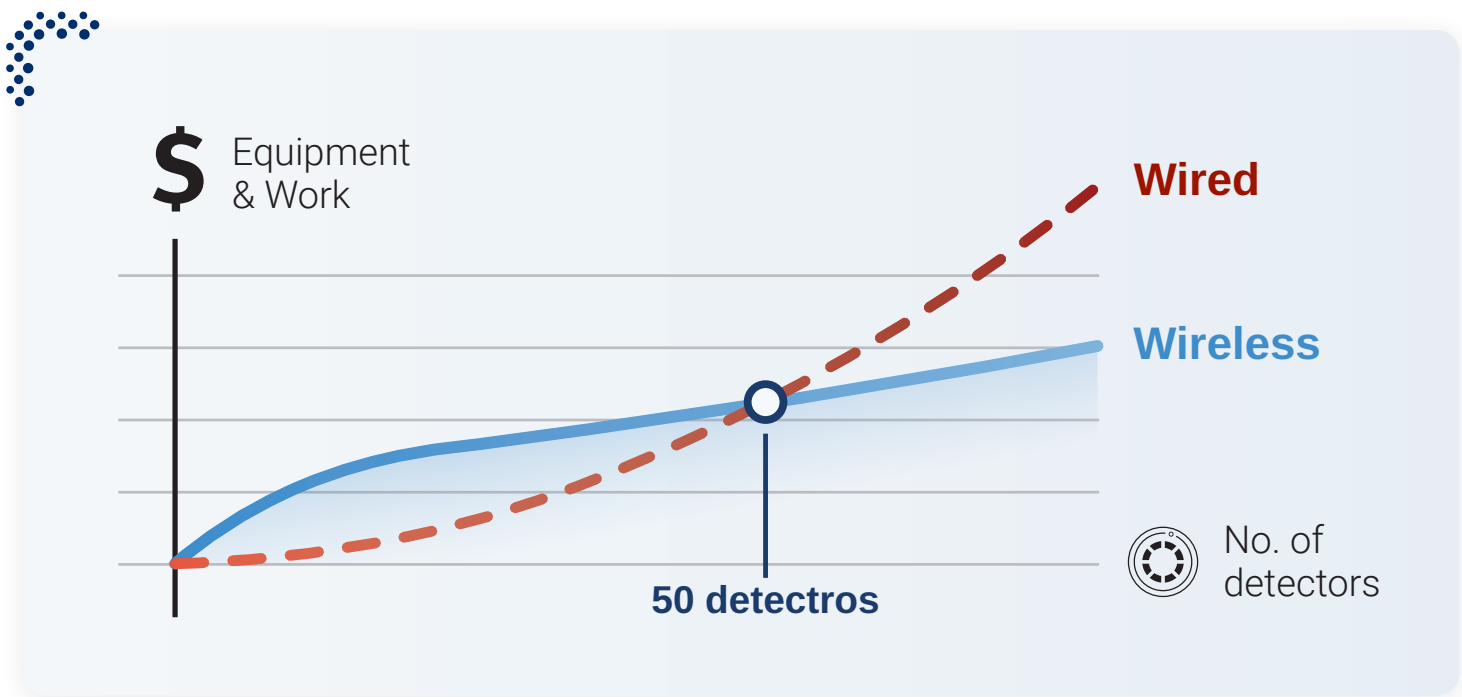
Since wired equipment is cheap, the cost of a small wired alarm will be less than a wireless one. As the number of detectors increases, more resources have to be put into electrical wiring, various peripherals, and accessories, as well as the installation work. In the case of big projects, wireless alarms are much more cost-effective, since you only have to pay for the equipment itself and do very little work.

The biggest gripe people have with wireless alarms is that the equipment is quite a bit more expensive than wired solutions. Howerver, you have to consider what goes into the cost of the project. Approximately 2/3 of a wired project is labour expenses, and 1/3 is the cost of equipment. The opposite is true for a wireless solution.
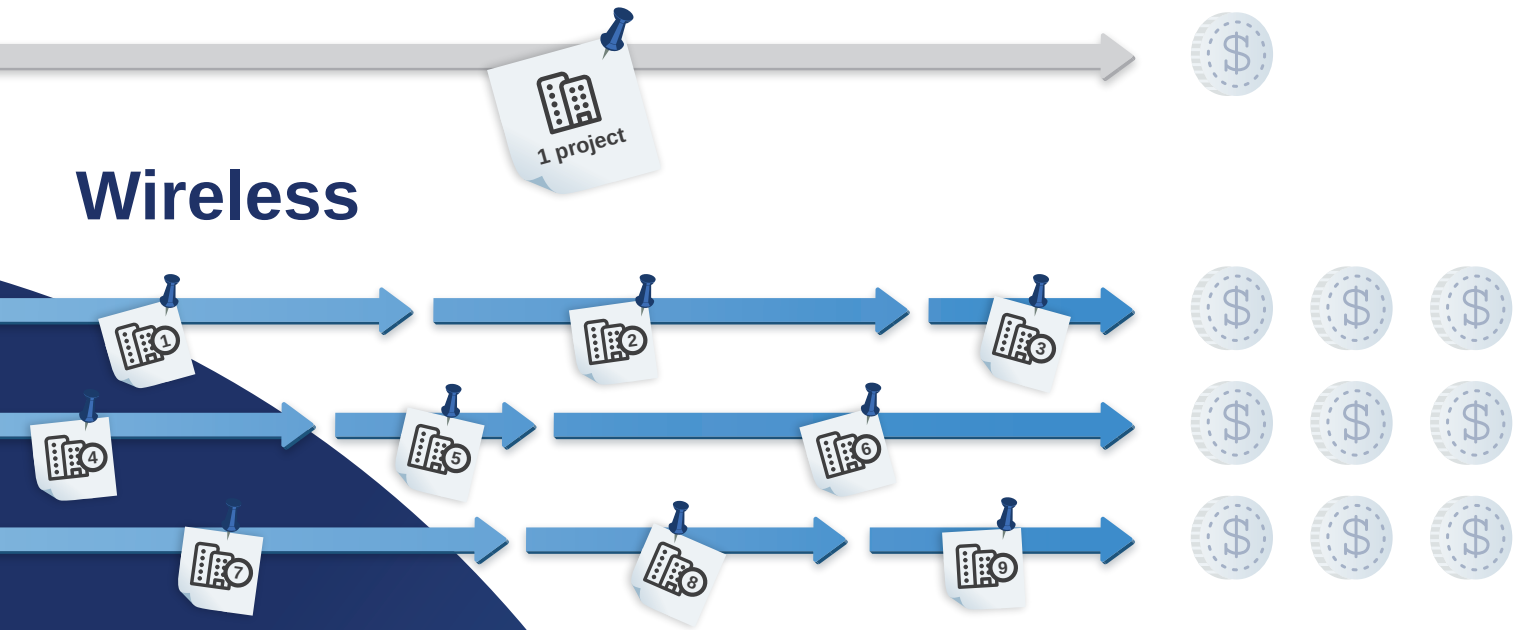
Simply comparing the price of wired and wireless equipment doesn't show the full picture, you always need to compare turnkey costs, take into account materials, cables and work.
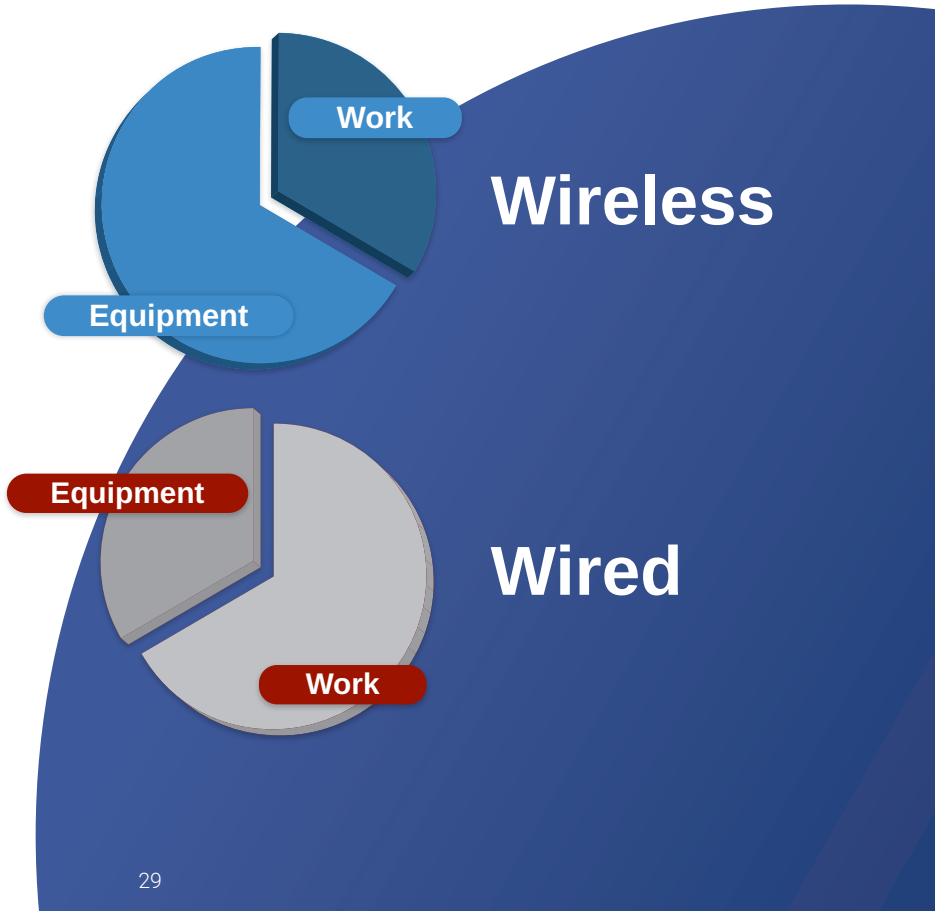
Wireless

Wired

Choose Wireless

Wired

1 project

Wireless

Projects with wired systems can take a lot of time depending on the building size. Since wireless systems are much easier and faster to install, you can do more projects in the same amount of time it would take you to install one wired system. Profit margins from each of the projects add up to a greater revenue over time.

Installation:

	Wireless		Wired	
Mesh network				Loop connection
Days for one project				Weeks for one project
Minimal skills				Special qualification
Cost effective				Costly

Transparent Maintenance

Wireless systems are not just easier to install, but also easier to maintain. Searching for a fault in a wired alarm can be tricky, as you often need to inspect every section of the loop to find where the wire is shortened of broken. Sometimes it's a one-hour job, sometimes, fire alarm cables are installed alongside a myriad of other power and network cables, and you need to spend a couple of days at the building to sort out this mess and figure out what the cause of the fault is. Wireless technologies mitigate this problem. There are no faults from broken or shortened wires, and every component of the system is easily accessible at any time.

Go wireless and forget this →

No wires also means less false alarms from electromagnetic interference. And our software allows you to inspect the state of each device, see the connection strength, the battery voltage, and the dust levels. So the maintenance is as clear and transparent as it gets.

Maintenance:

		Wireless	Wired
	Loop cable repairs	✖	✔
	False alarms from interferences	✖	✔
	No hidden wires	✔	✖
	All system stats are monitored	✔	✖

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