



COMPENDIUM HOSPITALITY

LOXONE

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Preface

Dear hoteliers, restaurateurs and partners,

the hotel industry has received little attention from building technology in recent decades. Many have built mechanically operated rooms with switches and thermostats due to concerns about their guests. Personally, I can understand this sentiment, as few systems focus on the guest experience and come with easy-to-use, purposeful software.



While other manufacturers build components, sell them at a high price and only third-party systems allow software intelligence to be installed, here at Loxone, we have set ourselves the goal of playing in the Champions League. For us, it's Champions League level to develop and produce complete solutions instead of components. Loxone develops all products in-house, which guarantees a fast response time and a high level of expertise in the areas of application.

As a provider of a complete solution, you have no excuse if the system fails. Taking on this responsibility is a matter of course for us as a manufacturer. Loxone has many products that, when combined in one installation, make it possible to bring the needs of the hotel operator into excellent symbiosis with simplicity for guests and employees of different hierarchies. The guest experience is at the heart of our solutions.

Perfection can only be achieved through a lot of practice. For us, there is no alternative to allowing products and software to mature to perfection in our own installation. At the Loxone Campus in Kollerschlag, we have implemented what is state-of-the-art for us in 2023. Warehouse, office, restaurant, meeting space, wellness area, rooms... are all part of the installation.

As a hotel operator, we know that the best overnight occupancy rate and the contribution margin generated by it melts away like an ice cube in freshly brewed coffee with maintenance effort and energy costs.

The energy crisis started in 2022. Within a few weeks, energy costs have risen many times over, and the world has changed abruptly. Within a few weeks, Loxone had a comprehensive solution to get costs under control with the Energy Manager and the Energy Monitor. All these features are free of charge and part of the product via update. This is only possible if a product consists of a lot of software. At Loxone, the products consist of 85% software and only 15% hardware. Most manufacturers of products build hardware and sell it at a higher price than Loxone. Software is bought separately, although the interfaces between the hardware and software between manufacturers are usually not very stable, which leads to high maintenance costs and disruptions in the event of updates or power failures.

Even if it is not always easy, it is certainly for us to take on all the responsibility and offer products with unique performance. This is a matter of honor for us, of which we are proud.

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Since Loxone was founded in 2009, we have had the credo "The limit of what is feasible is not in the product, but in the mind". To date, we are proud to have implemented over 300,000 projects worldwide, with a wide variety of challenges.

For an installation to do what is sensible and smart, it needs a good product architecture, which starts in the planning phase. To make the planning stage more successful, we have compiled a few points. On the one hand, it is divided into areas of application such as hotel rooms, reception and much more, and on the other hand, it is divided into topics such as lighting, heating, air conditioning, ventilation, audio and much more. You can also find installation tips in this compendium.

I hope we can make it easier for you to gain an insight into the complex world of building technology and hope you enjoy reading it.

Sincerely,

A handwritten signature in black ink, appearing to be 'Thomas Moser', with a stylized, flowing script.

Thomas Moser
Group CEO, Product Architect

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Introduction

Automation solutions play a crucial role in the modern hotel and restaurant industry.

The topic of energy efficiency in particular is often in the spotlight. On the one hand, to save costs and on the other hand, to reduce the ecological footprint of a company. Does a room need additional lighting when there is sufficient daylight? Should the heating be active while the windows are open? Loxone is the only solution in the world that can be used to implement a holistic, manufacturer-independent energy management system.

In addition, automation solutions can elevate the guest experience and convenience to unprecedented levels. Imagine a hotel bar: how can the perfect atmosphere be ensured at any time of the day through the targeted use of music and lighting?

In fast-paced times like these, the flexibility of building control also plays a decisive role. The Loxone system is largely software-based and enables companies to adapt quickly to changing conditions.

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Challenges

In this chapter, we shed light on the complex requirements for building automation in the hotel and dining industry. We show how intelligent systems can solve these challenges to increase operational efficiency and create an unparalleled guest experience.

Reception

The reception is the linchpin of a hotel. By integrating building automation, you can not only improve the guests' comfort, but also manage operational challenges more effectively.



With Loxone, you give your employees a powerful tool that remains easy to use despite the comprehensive range of features. If, for example, the temperature in the wellness area needs to be adjusted, this can be done quickly and easily in the Loxone App . No technical staff is required.

Managing individual access permissions for guests can also be particularly challenging. Whether it's access to the wellness area or the use of a wallbox – your employees can set up individual authorizations quickly and easily.

To ensure an optimal guest experience, it is also important that disturbances such as emergency exits or sauna doors being left open for too long are immediately reported to the reception. The Loxone system ensures that such important information is forwarded promptly to enable quick action. This is extremely easy to do with a product that consists of 85% software.

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TOP FEATURES

- > User-guided access via the Loxone App
 - Up to the last level, if required
 - It depends on the user's permissions.
- > Quick intervention in parameters such as sauna temperature, opening hours, pool cover, etc.
- > Simple assignment of individual access authorizations
- > Central reporting point for technical alarms
 - E.g. in the case of rain while doors are open
 - "No Room Service Today" requests
 - And much more

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Conference Rooms

The requirements for conference rooms are diverse and complex. They range from creating an adaptable space that supports different event formats and remains easy to use despite its extensive technical equipment, to ensuring comfort and connectivity for participants, to efficiently managing energy and resources.

Thanks to the integration of light, shading, air conditioning and multimedia technology, building automation allows the room to be quickly and easily adapted to the individual needs of use.



With the Touch Pure Flex, we offer an intuitive control element for central control of the entire room.



Example configuration of a Touch Pure Flex

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<https://configurator.loxone.com/>

Another crucial aspect is access authorization. Not only does the speaker have a key for the conference room, but also the participants have access authorization. This will be issued quickly and easily for the participants at check-in. It is not necessary to grant access to the seminar area manually (i.e. lock and/or unlock doors traditionally).

To ensure an environment conducive to concentration, good air quality in the room is essential. Regardless of whether there are 5 or 50 people in the room, the automatic room ventilation control adjusts the ventilation independently. It considers humidity, temperature and CO₂ content to always ensure ideal air quality.

TOP FEATURES

- > Easy to use via Touch Pure Flex or Loxone App
- > Individual access authorization
- > Automated room ventilation control

Our recommendation:

In conference rooms, automatic features should be used sparingly. Automatic lighting control based on presence and lighting conditions can quickly become disruptive during a presentation where full darkness is required.

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Restaurant & Bar

In restaurants and bars, atmospheric lighting and a high-quality sound experience make a significant contribution to a pleasant ambience. Operators have specific ideas and wishes regarding the ambience of their location, which are strongly influenced by factors such as light, music, air conditioning and decoration. To ensure an optimal guest experience, manual intervention by guests or staff, for example regarding the selection of music, is, therefore, usually not desired.

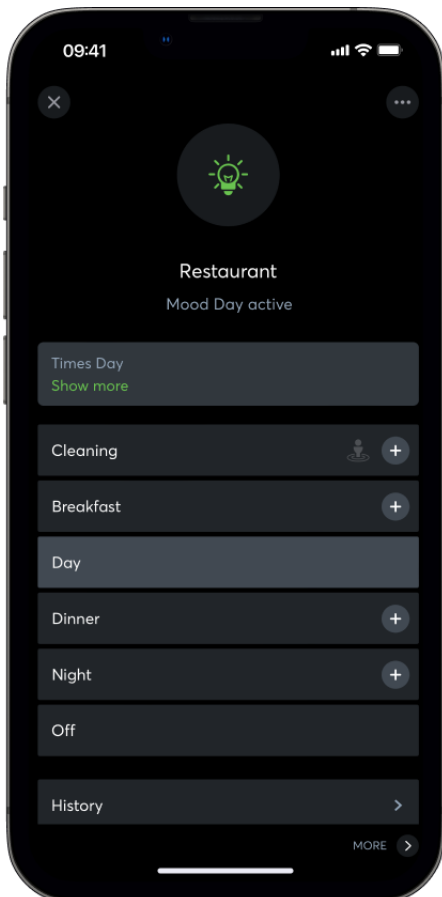


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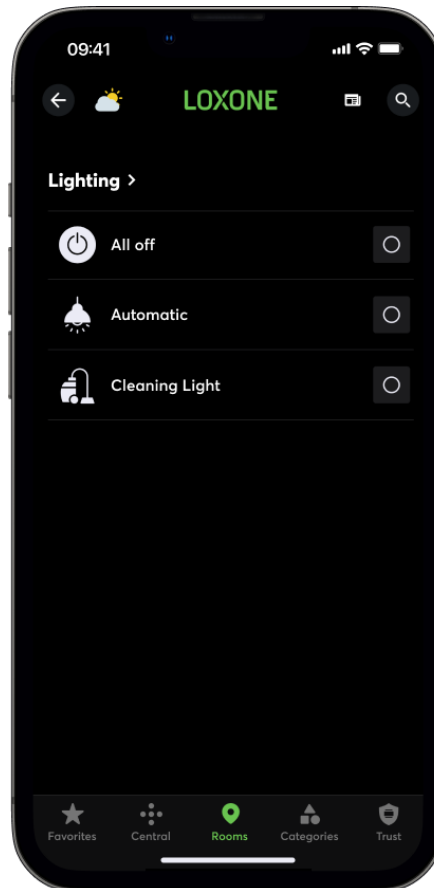
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With Loxone, you can use lighting scenes and music to define the ambience that fits perfectly within your gastronomy concept. The Miniserver ensures that lights and music are automatically activated depending on brightness, time of day, etc.

On request, the concept changes several times a day – completely unnoticed by the guests thanks to smooth transitions. From a relaxed breakfast to a lively bar. Changes can be made quickly and easily – but only by authorized persons.



Lighting control from the restaurant manager's point of view

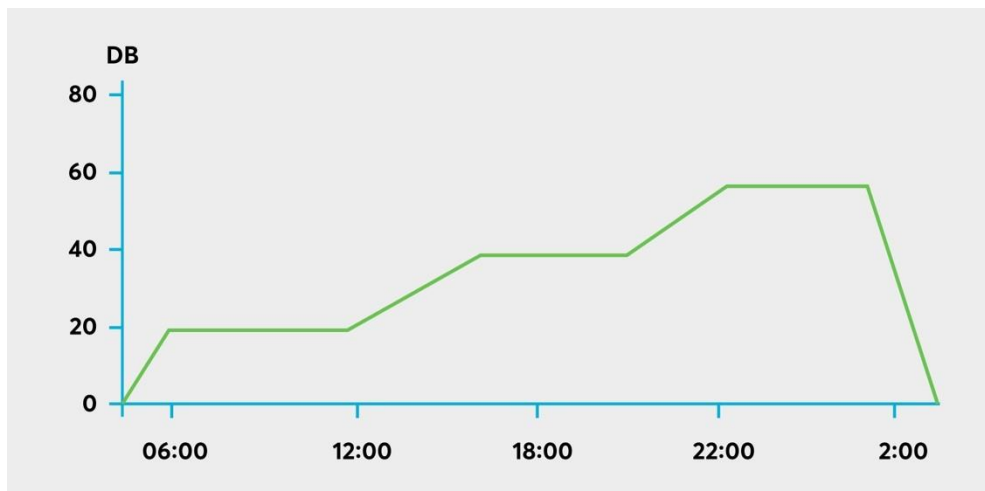


Lighting control from an employee's point of view

Open-plan kitchen concepts are becoming increasingly popular but pose a particular challenge for room ventilation control. Precise, automated ventilation control, based on the overpressure principle, significantly improves air quality and, thus, enhances the overall experience.

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Our recommendation:

With good sound and suitable music, you ensure a feel-good ambience for our guests. Quadral experts have developed loudspeakers that create a uniform and high-quality sound carpet in the room.



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TOP FEATURES

- > Sound carpet in Hi-Fi quality
- > Individual volume adjustable for each speaker
- > Automated room ventilation control
- > Automatic adjustment of light and music
 - Breakfast
 - Day
 - Dinner
 - Bar
 - Cleaning
- > Precise control of light & music

Kitchen

The kitchen is the heartbeat of any restaurant. Traditionally, very load-intensive consumers can be found here, which can contribute to an overload of the building infrastructure in the worst case. Especially in the kitchen, intelligent load management, therefore, offers decisive advantages. Almost all professional kitchen appliances are suitable for load management.

In addition, it should be considered that in the commercial sector, network fees are often calculated based on the 1/4h cycle. An overrun of power can, thus, not only lead to a failure of the power supply, but also cause considerable additional costs. With Loxone's load management, these peak loads can be monitored and avoided. What's best: Loxone's solutions consist of 85% software, which is free of charge.

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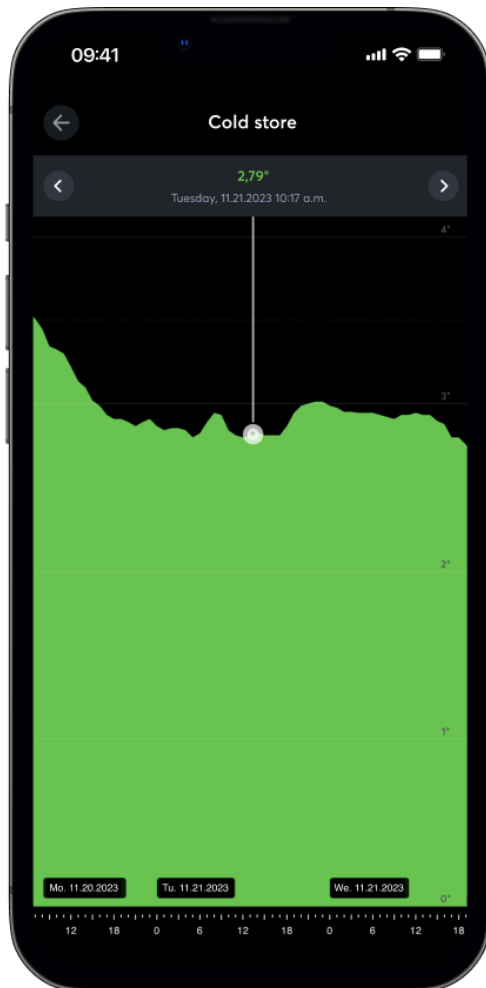


Load Manager Visualization

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Another challenge is the monitoring of cold rooms. This is often where the goods are stored, i.e. a lot of money. A door accidentally left open can lead to costly damage. The Miniserver can monitor the doors as well as temperatures, and capture and record them free of charge. These can then be provided for regulatory authorities. In critical situations, an individual alarm chain is triggered automatically.



Cold Storage Temperature Statistics

TOP FEATURES

- > Peak load management
- > Cold store monitoring
- > Statistics Recording & Data Logger

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Ballroom & Event Space

Event spaces are a versatile area that usually has extensive technical equipment such as projectors, screens, sound systems and much more. Ideally, all of these components should act as a unit. With the Loxone Miniserver, the individual components can be easily integrated and operated, so that even untrained personnel can use the technical equipment, through simple one-switch operation, for instance.

Large rooms also pose special challenges for ventilation and heating technology. If 100 people enter a room at the same time, the temperature rises rapidly, while the CO₂ content increases. An HVAC system controlled by the Loxone Miniserver can react quickly to these changing conditions. Only a minimum of hardware is required for this, 85% is solved by software, which is free of charge as is usual with Loxone.



TOP FEATURES

- > Easy-to-use media control
- > Easily adaptable lighting moods
- > Automated room ventilation control

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Wellness & Spa

The wellness area is intended to be a place of complete relaxation for guests, where even small details can have a big impact on their well-being. Disturbing factors such as inappropriate or too-loud music, a temperature that is too cool in the resting area or unpleasant lighting can affect the overall experience. However, a customized and automated wellness environment by Loxone can significantly improve the guest experience. At the same time, it helps to increase energy efficiency and helps to save time and costs.



Pool

There are numerous ways to save energy when implementing a pool landscape. For example, inform facility management when a pool is not in use to close it to preserve heat and reduce energy consumption. You can also use the waste heat from the cooling technology to heat the pool area or the water cost-effectively.

Automation also offers great potential in the monitoring and maintenance of a pool. This allows you to automatically trigger technical alarms – e.g. in the event of significant water loss, a high temperature deviation or a pump failure. Early notification allows you to react quickly, save maintenance costs and prevent significant follow-up costs.

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Sauna

In the sauna area, a lot of energy can be saved through automation. For example, through presence-based control of the sauna heater. Or through the use of sensors that make it possible to inform the building services or the reception as soon as a sauna door is open for a longer period of time. If a guest wishes to make changes, such as adjusting the sauna temperature, this can be done quickly and easily remotely via the Loxone App.

Relaxation Rooms

The atmosphere in relaxation rooms is created by a combination of lighting, music and room temperature. A system automated with Loxone makes it possible to define scenarios based on time of day or seasons to always ensure an ideal environment. Dimmable lights and LED strips that create soft gradients contribute to a sense of calm, while the integrated audio system delivers relaxing sounds. The technology remains discreetly in the background while contributing to the well-being of the guests.

TOP FEATURES

- > Automated energy management
- > Reporting of incidents
- > Perfect guest experience thanks to automated lighting, sound and air conditioning
- > Service Call Button



Push notification of the Loxone App

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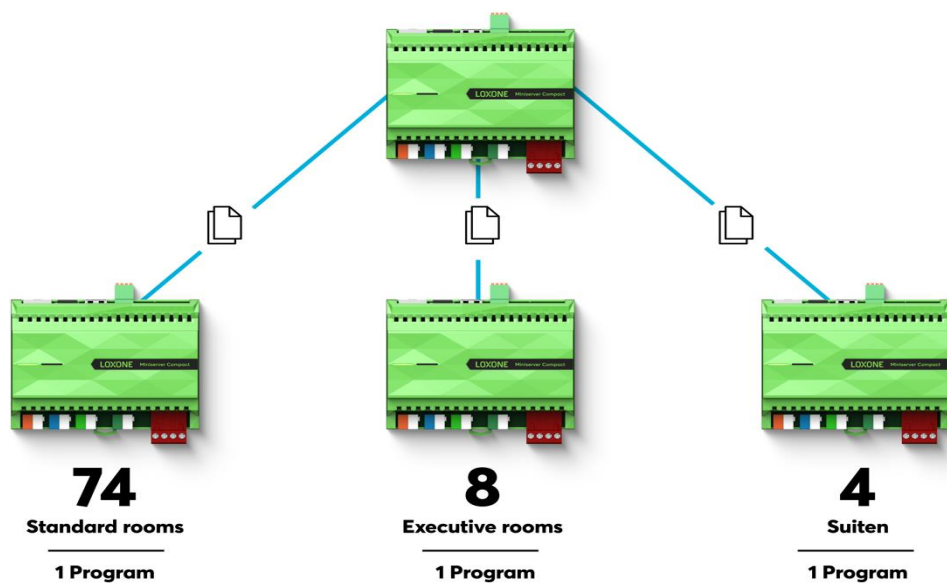
Hotel Rooms

A hotel room must not only be comfortable and inviting, but also meet the diverse needs and expectations of guests. Loxone's integration offers the opportunity to create a customized experience that both increases operational efficiency and improves the guest's stay.

For example, the commissioning and maintenance of a large number of rooms has been complicated and time-consuming. With the Multiplier, we have created a special tool that allows you to set up and manage a variety of similar rooms with minimal effort. Parameterization and programming only need to be done once and can then be transferred to all other rooms. It doesn't matter if it's 10 or 100 rooms.



<https://www.loxone.com/enus/kb/multiplier-project/>



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A particular challenge in hotel rooms is their operation. A wide variety of technical equipment, from lighting to shading and air conditioning to multimedia systems and curtains, are usually controlled with a wide variety of devices. The operation of this hodgepodge is not comfortable for the guest. That's why we created the Touch Pure Flex. This is manufactured individually, according to the space requirements on a single-piece basis, and guarantees easy operation of the rooms.



Example configuration of a Touch Pure Flex



<https://configurator.loxone.com>

Our recommendation:

At the Loxone Campus, we have taken care to use automatic functions carefully in the rooms, as we do not want to patronize our guests.

TOP FEATURES HOTEL ROOMS

- > Simple operating concept via Touch Pure Flex
- > Multiplier project for easy configuration, maintenance and cost savings
- > Reset to Default: at check-out, all areas (shading, audio, lighting, etc.) are automatically reverted back to the default setting

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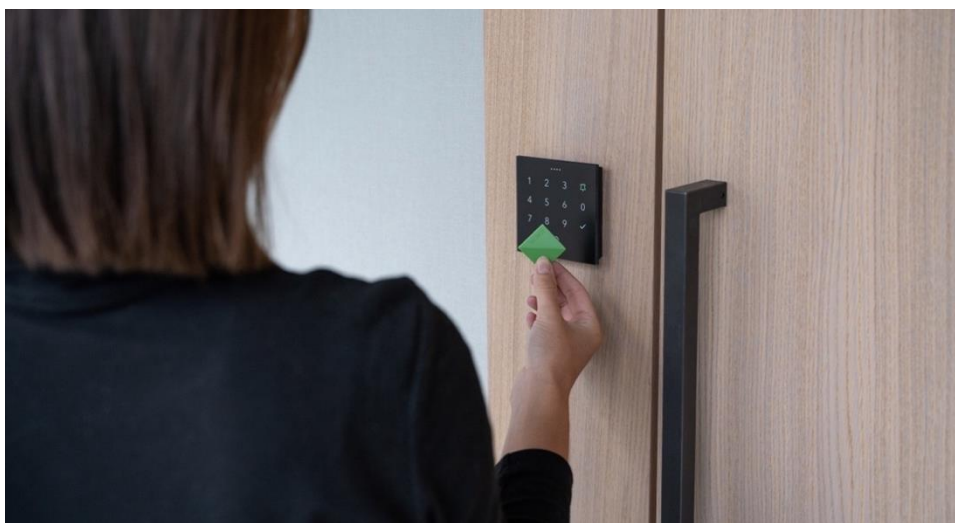
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Common Areas

In areas such as storage rooms, corridors, changing rooms and toilets, people often forget to turn off the lights. In contrast to hotel rooms and conference rooms, it is important to control the lighting largely automatically, depending on the presence. At the Loxone Campus, the energy-saving basic lighting requires 80% less energy than the normal lighting.

Especially in regard to storage rooms, intelligent access control is another special challenge. Valuable goods such as spirits, wines and technical equipment such as projectors are stored there, which is why access should be reserved for selected people. With the NFC Code Touch, a personalized access system can be implemented, which also has extensive options in terms of history and logging. This avoids anonymous access and curbs fraud attempts.



<https://www.loxone.com/enus/products/security-access-control/>

TOP FEATURES

- > Automatic lighting, ventilation and air conditioning
- > Personalized access authorization
- > Last Authorization Record

Features

We are often perceived as a manufacturer of hardware – but our hardware products are only the tip of the iceberg. First and foremost, we are software manufacturers. After all, 85% of our total development efforts go into our software tools. They are also what set us apart from all other systems on the market. So, you could say you pay 15% (hardware) and get the full range of features of Loxone's powerful software solution.



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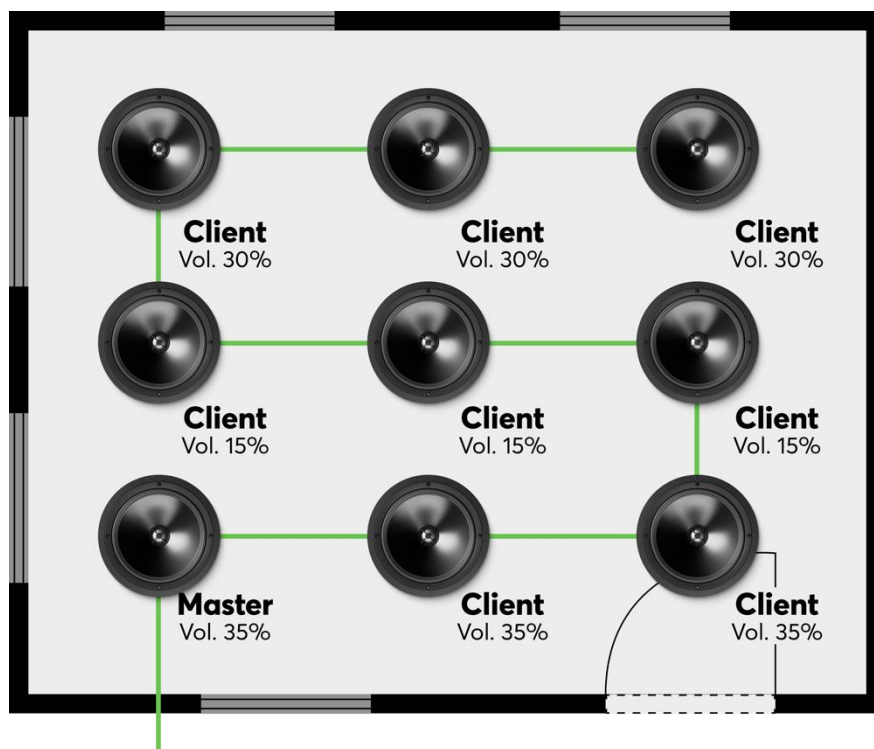
Audio

Conventional wiring-configured audio systems often have two major drawbacks. On the one hand, they often form islands within the building technology. On the other hand, they are very cost-intensive – both in terms of purchase, installation and maintenance as well as operation.

In addition, large areas are often not feasible with amplifier-based systems, as large distances must be bridged. 100V audio systems, which would solve the problem of line lengths, are not convincing in terms of sound quality and require expensive hardware.

With the Audioserver, Loxone offers an innovative solution that has been specially developed to reliably perform its service in 24-hour continuous operation for the entire (building's) life. At the same time, the system is completely flexible, can be seamlessly integrated into the building automation system and is freely scalable.

To provide sound for large areas intelligently and with the best audio quality throughout, we have developed a digital, bus-based master-client audio system. This makes installation extremely easy, and the error rate is reduced to a minimum.



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Unlike usual, no server rack is required for installation. It is no longer up to date to build such systems with wiring.

The Audioserver is mounted in the control cabinet alongside other Loxone components to save space. Like the rest of the building technology, it can be installed by a qualified electrician. With a power consumption of only 2 watts (in standby), it is also extremely energy-saving. Loxone offers perfectly matched speakers for the Audioserver. From the almost invisible install speakers to the powerful satellite speakers for outdoor use, there is a suitable solution for every application.

TOP FEATURES

- > Automated sound system in the wellness area, common areas, bar and restaurant
- > Easy to use and quick adjustments via the Loxone app
- > TTS (Text-to-Speech)
- > Announcements



<https://www.loxone.com/enus/products/audioserver/technical/>

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Music Sources & Music Formats

Loxone's fully integrated audio solution offers a comprehensive feature set in terms of music sources and music formats:



Spotify Connect



TuneIn



SD-Card



Apple AirPlay 2



USB



Line-In



Network



Soundsuit



Our recommendation:

In the Loxone Campus's restaurant, the volume and music selection is automatically adjusted, suitable for different times of the day and occasions. There are areas with reduced volume.

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Service

The intelligent automation saves many repetitive tasks. And even though the automated functions mean that it is no longer necessary to constantly press a control element, there are still situations in which the use of switches is more practical. And of course, staff and guests must always remain in control of the system. At the same time, the operation must be intuitive, user-friendly and in real time.

One System for the Entire Building

The reduction to a single, consistent operating concept creates simplicity. All aspects of the building can be operated according to the same principle and there is no need for training for individual areas.

Whether it's changing the lighting in the lobby, controlling the temperature of the sauna or assigning individual access authorizations – all of this can be done according to the same operating concept without the support of a technician.

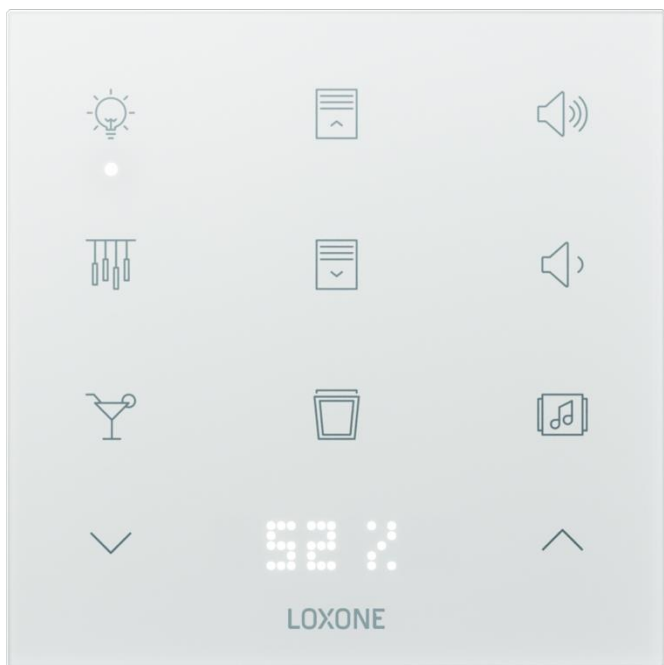
Fewer Controls, More Clarity

Clarity and intuition are at the forefront of Loxone controls. You don't need a multitude of switches, buttons, etc. to control a room.

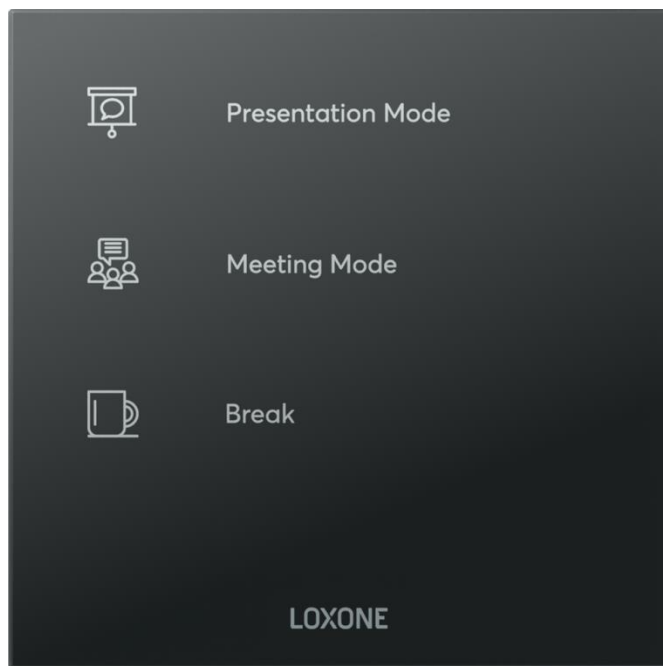
Thanks to the Loxone Switch Standard and the Touch Pure Flex, operation remains as simple as possible for staff and guests without obstructing the walls with controls.



Touch Pure Flex Hotel Room Template



Touch Pure Flex Restaurant Template



Touch Pure Flex Seminar Room Template

Worth knowing:

Loxone's controls not only enable easy control, but they also provide data on temperature, humidity and CO², depending on the version, which are required for intelligent automation.

The Loxone App

All the functionality of a smart building in one application – that's the free Loxone App. Whether on a tablet on the wall or on a smartphone, with the app, intuitive and precise operation of all areas is always at your fingertips. The Loxone App can be customized so that different users, such as hotel management, housekeeping staff, technicians or receptionists, can only access the features that are important to their workspace.



Practical example:

The hotel management is authorized to adjust the lighting and music of the entire restaurant, if necessary, while the kitchen staff can only change the lighting inside the kitchen.

Access

In every hotel and restaurant, there are areas and features that are only accessible to certain employees or guests. Conventional access systems are often complex, and changes can only be made with great effort. Most of the time, customizations, such as adding new users or changing access permissions, require a system administrator.

Loxone offers a comprehensive and, at the same time, user-friendly solution for assigning access authorizations. These features can be integrated seamlessly into the overall system. Adjustments can be made easily and independently via the Loxone App, without the need for specialist personnel.

Practical example:

A craftsman receives a time-limited key card to carry out maintenance of the elevators. This key card can be created quickly and easily with the help of the Loxone App.



<https://www.loxone.com/enus/products/security-access-control/>



Spotlight Special: Access system at Loxone Campus:

<https://www.loxone.com/enus/blog/access-control-loxone-campus>

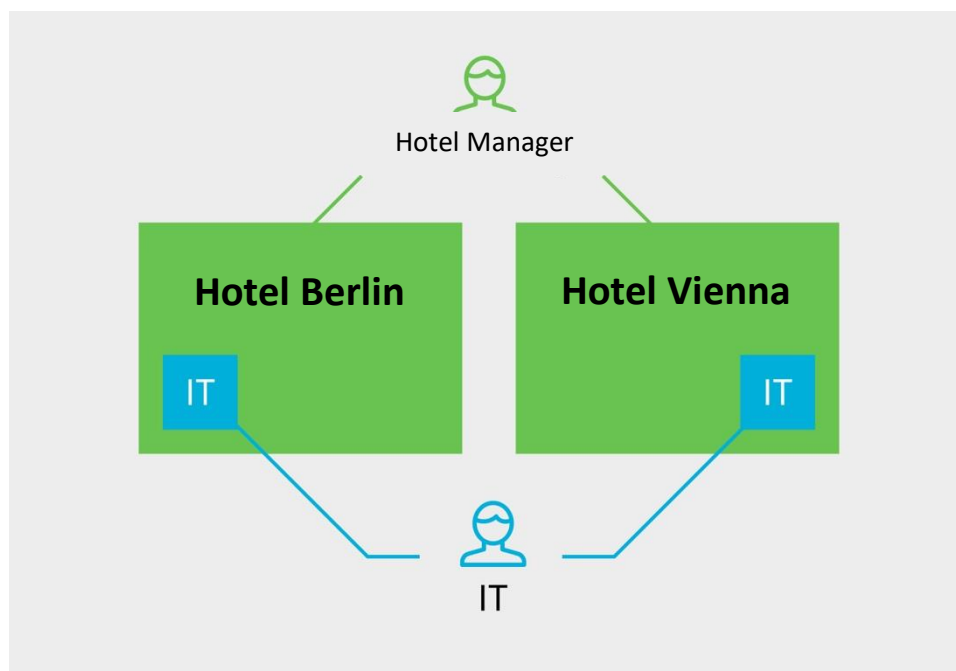


NFC Code Touch

User

The management of access authorizations is closely linked to user management. Both access to certain areas and the authorization to perform functions via the Loxone app are linked to individual users or groups of users. New users can be easily created and assigned to the appropriate groups. All of this can be done independently without specialist personnel via the Loxone app.

We have developed a unique feature especially for larger companies: Loxone Trust. It provides employees with cross-site user management without having to create it individually.



TOP FEATURES

- > Individual user and rights management
- > Logging & Tracking
- > Time-dependent codes / one-time codes
- > Cross-site user/access management

Shading

Loxone's intelligent automatic shading system ensures comfort, energy efficiency and privacy.

Especially for hotels and restaurants, the increased energy costs can be an immense challenge. To heat and cool your rooms as energy-neutrally as possible, the shading is automatically controlled based on the position of the sun, interior temperature and presence.

At dusk, the shading elements close automatically on request. This means that in a hotel room, for instance, the highest level of privacy can be guaranteed.

The automatic function is not used in this case, so as not to disturb the guest experience. And of course, users always retain control over the shading of a room. If the automatic transmission is overridden manually, it remains deactivated for the rest of the day.

In certain situations, automation should even be largely dispensed with. For example, in a conference room that is currently in use, all automatic rules could be automatically deactivated.

TOP FEATURES

- > Intelligent control depending on daylight, position of the sun, indoor temperature and much more
- > Reduce energy costs thanks to intelligent automation
- > Unique guest experience thanks to comfort functions such as light alarm clocks
- > Maintenance-free, long-lasting system
- > Safety features such as fire, storm and frost protection
- > Control of numerous shading elements such as blinds, roller shutters, awnings, Venetian blinds, etc.
- > Easy to use with Loxone Touches or App



<https://www.loxone.com/enus/products/shading/>

Lighting

Lighting has a decisive influence on our well-being and the power to completely change the ambience of a location.

Especially in larger installations and public areas such as event rooms, many light sources of different types are used frequently. This makes operation complicated and often requires the use of a special lighting technician.

An automated lighting control system ensures optimal lighting of the rooms, depending on presence and daylight. The software automatically adjusts the lighting throughout the day.

In the Loxone App, the lighting can be easily and quickly adapted to the individual needs of your guests. There is no need for a specialist.

TOP FEATURES

- > Intelligent automation depending on brightness, time, presence and much more
- > Simple and intuitive control of all light sources via Loxone Touches or in the Loxone App
- > High energy efficiency due to presence-dependent control
- > Integration of a wide variety of light sources and standards such as DALI, DMX and more

We recommend the use of 24VDC bulbs, these can be dimmed continuously and flicker-free and the control via the 24V RGBW dimmer is very cheap.

Good to know:

At the Loxone Campus, you can indulge in culinary delights at the trendy restaurant Glorious Bastards. It inspires with its unique ambience and is a marvel of lighting moods. A wide variety of light sources and lighting techniques are combined here. They impressively set the scene for the stylish equipment. Almost unnoticed by the guests, the lighting changes automatically throughout the day. From a relaxed breakfast to a cozy dinner and a lively bar.



<https://www.loxone.com/enus/products/lighting-control/>

Heating, Cooling & Ventilation

Studies have shown that more than 40%* of the energy consumption of hotels and restaurants is accounted for by air conditioning – i.e. heating or cooling. Building automation offers various ways to increase the efficiency of the largest energy consumer in your building and, thus, massively reduce energy costs.

The system learns autonomously when it needs to start heating or cooling to achieve a certain desired temperature at a given time in the most energy-efficient way possible.

If a guest is not in their room, the air conditioning works in eco mode. If a window is open, the air conditioning is completely deactivated.

When present, guests have the opportunity to quickly and easily adjust the temperature in their rooms according to their personal preferences. The prerequisite for this is a fast-reacting heating and cooling system.

In public areas, such as restaurants and seminar rooms, good air quality and circulation are also essential to create a healthy and pleasant environment.

TOP FEATURES

1. High energy efficiency through intelligent automation such as presence-based control
2. Easy customization by the guest via Loxone Touches and Loxone App
 - a. After a check-out, all settings are automatically reset to the defined default settings
3. Air quality monitoring and control
4. Low-maintenance, reliable system
5. Integration of different heating systems



<https://www.loxone.com/enus/products/zoned-hvac-control/>

*Sources:

Energy Use in Hotel Businesses – Empirical Survey and Programme Evaluation of the Energy Check for Tourism Businesses in the Province of Salzburg, page 79

Optimal use of energy – Information for the hotel industry, page 2

Energy Management & Energy Monitoring

According to the research by NREL, buildings are responsible for 40% of the United States' total energy consumption. With holistic energy management, this energy consumption could be reduced by half.

The focus is on recording and visualizing all energy consumers, producers and consumers in the building. Whether it's heating, cooling or electrical energy. To visualize and optimize all energy flows, a building needs a central control system: the Loxone Miniserver. This connects all the (energy) components of a building and ensures that they work as efficiently as possible, both individually and in combination.

There are three main phases to energy management with Loxone:

1. Recording and visualizing energy flows: The first step to true energy management is to know where the energy in the building goes, how much it consumes and how much it produces. Loxone's Energy Flow Monitor plays a central role in this. All data can be displayed in real time in an appealing visualization in the Loxone App. Based on this information, a clear overview of the current energy status of the building is created and targeted optimization measures can be taken. It is important to note the exact differentiation between power (kW) and work (kW/h).
2. Reduction of basic consumption: Loxone can be used to find ways to reduce the base load, for example by automatically switching off unnecessary loads. In addition, potential energy leaks are revealed. For example, frequent energy wasters are air conditioners or ventilation systems that run on high levels even though there is no one in the room.
3. Shifting energy consumption: With Loxone's unique software, energy consumption can be shifted to times when energy is cheaper or even free – especially when solar energy is available.



The Energy Flow Monitor in the Loxone App

Ca. 40%* of the energy requirements of a hotel and dining business are usually accounted for by heating and cooling. A central aspect is, therefore, the efficient air conditioning of the rooms. These should only be heated or cooled if they are booked, for instance.

Another big energy consumer is the wellness area. Pools and ventilation systems are often among the biggest energy guzzlers in the hotel industry.



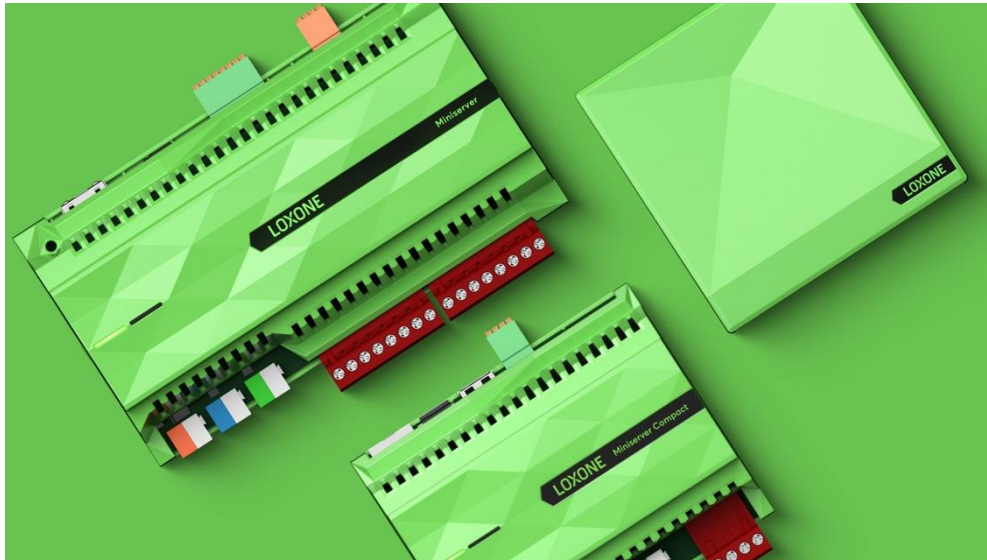
<https://www.loxone.com/energie/>

*Source: European Commission press article: Spotlight – Energy efficiency of buildings

<https://www.nrel.gov/news/features/2023/nrel-researchers-reveal-how-buildings-across-the-united-states-do-and-could-use-energy.html#:~:text=Buildings%20are%20responsible%20for%2040,building%20stock%20is%20also%20essential.>

Planning

Miniserver Architecture



The Miniserver is the brain of every Loxone installation. In contrast to other systems, there are hardly any components that make decisions independently, which simplifies structuring and configuration. Centralization enables comprehensive automation, simplifies configuration, and ensures greater operational reliability.

Depending on the size of the project and the specific project requirements, several [Miniservers](#) can work separately or in combination. This enables free scalability of the system and allows the automation of even large-scale projects. In such projects, the right Miniserver architecture is crucial.

Our recommendation:

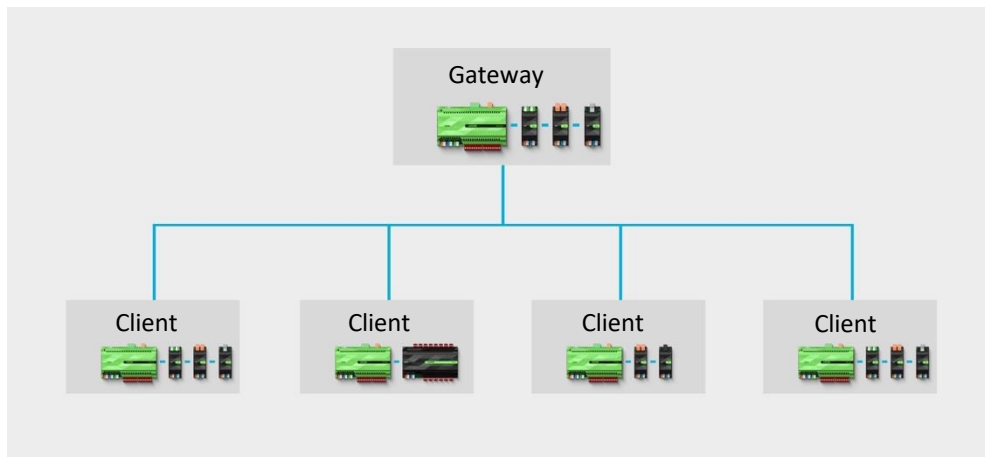
It is better to use more Miniservers, this saves time in the configuration.



<http://www.loxone.com/miniserver>

Gateway Client:

In a Gateway-Client system, a Miniserver as a gateway manages other Miniservers that are linked as clients. One advantage is that the individual client Miniservers work independently, and the rest of the installation continues to work if one client fails.



Good to know:

Where is Gateway-Client technology used on campus?

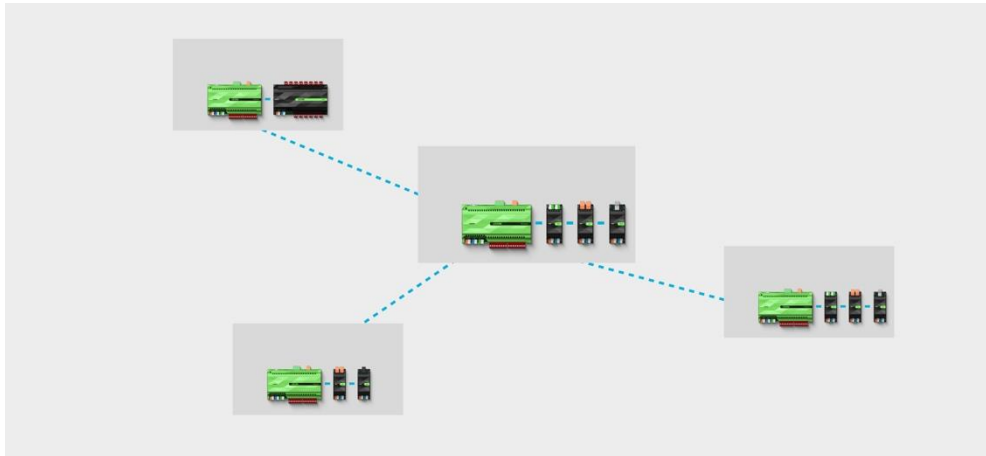
- > In the office area, where individual Miniservers control one area at a time
- > In the restaurant
- > In the hotel corridors
- > In the parking areas and in outdoor areas
- > In the wellness area
- > In the seminar area



<https://www.loxone.com/enen/kb/gateway-client/>

Network Intercommunication:

Network intercommunication is an efficient and elegant way to exchange value between Miniservers. Digital, analog and text values can be sent and received. The communication method is suitable, for example, for the exchange of weather information, power and meter values as well as individual control commands. Network intercommunication is ideally suited for integrating self-sufficient areas into the overall system.



Good to know:

At the Loxone Campus, network intercommunication is used in the following areas:

- > For communication between the hotel room and the reception
- > To broadcast control commands
- > To dispatch heating or cooling supplies
- > Between Client Gateway Systems



<https://www.loxone.com/enus/kb/network-intercommunication/>

Tree Intercommunication

Tree Intercommunication is an encrypted communication method via the Tree interface of various Miniservers. As with network intercommunication, digital, analogue and text values can be transmitted. One advantage would be that communication takes place independently of the network, which leads to increased reliability.

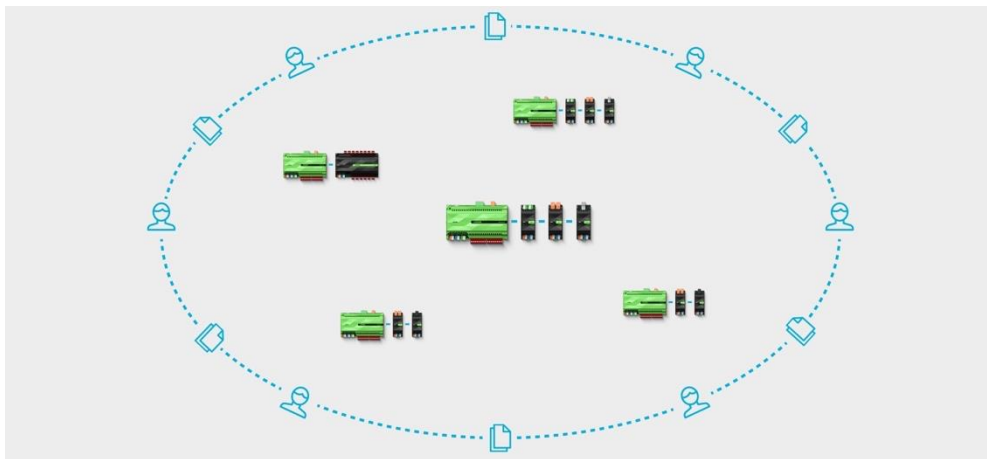


<https://www.loxone.com/enen/kb/tree-intercommunication/>

Trust

The so-called Trust is a trust relationship between different Miniservers. As part of the Trust, it is possible to transmit users, user groups and their data across locations and in TLS encryption, including via Internet connections. Digital, analogue and text values can also be sent.

In a hotel chain with different locations, a trust network provides employees with quick and uncomplicated access to the respective branches across locations, depending on their authorizations.



Good to know:

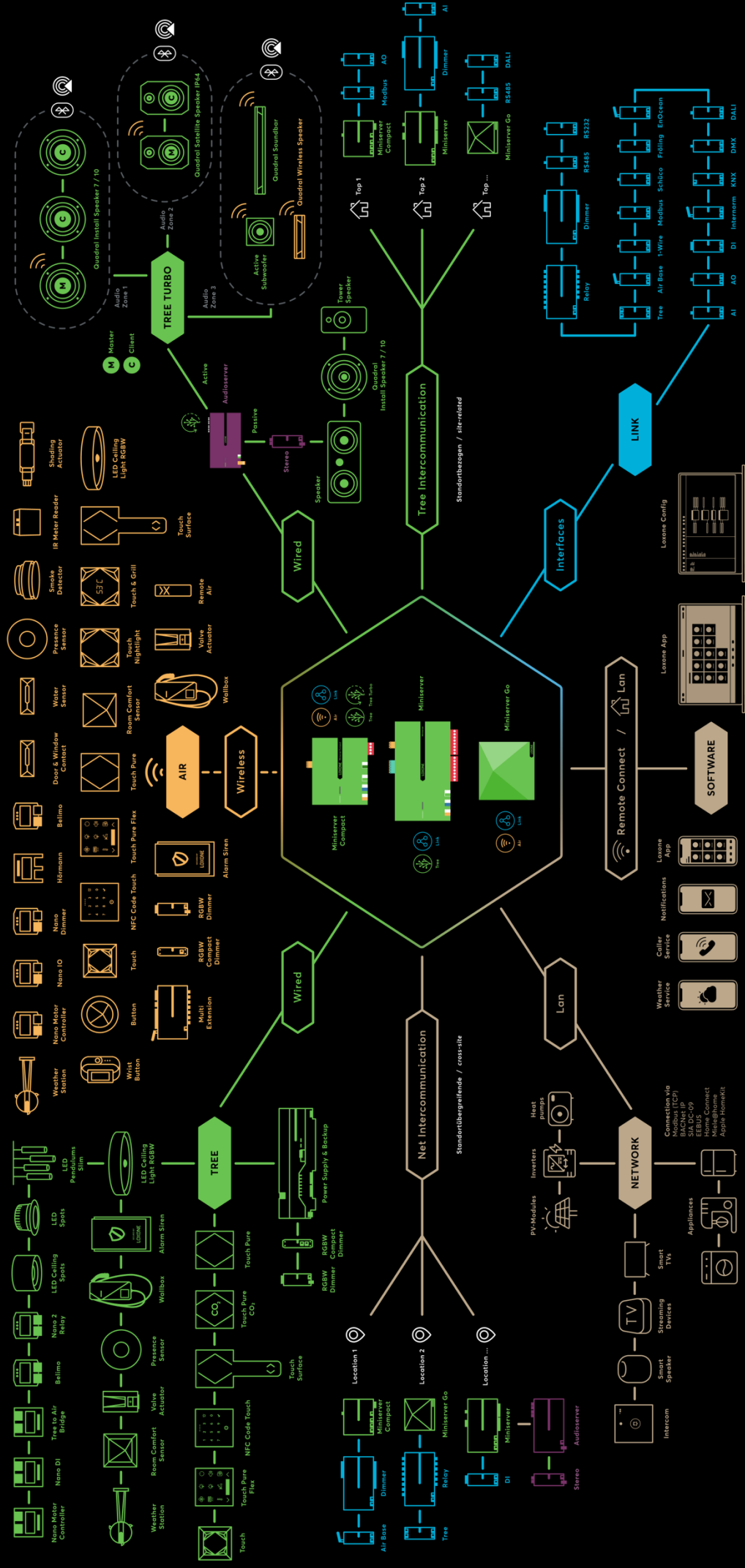
All Miniservers of the Loxone Campus are in a common Trust. The Miniservers at the Loxone Campus also have a Trust to the Miniservers of our international branches. This means that one user can be used anywhere.



<https://www.loxone.com/enus/kb/trust/>

Loxone System Architecture

To unleash the full potential of modern building automation, a holistic approach is crucial. Thanks to Loxone's flexibility, the system can be expanded at any time and the scope can be individually adapted to each project.



Implementation

Cabling

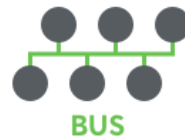
Tree & Tree Turbo

When constructing a modern building, cabling is a factor that should not be underestimated in terms of planning and installation. In a hotel and dining business, miles of cable laid across the building are not uncommon.

With the development of Loxone Tree, we have pursued a clear goal: to reduce the cabling and installation effort of switches, sensors and lighting to a minimum. And all this without compromising on flexibility or functionality.

The Tree Extension forms the basis for the Loxone Tree technology. 50 Tree devices can be connected to one Tree branch. For easy wiring, we have created a special cable.

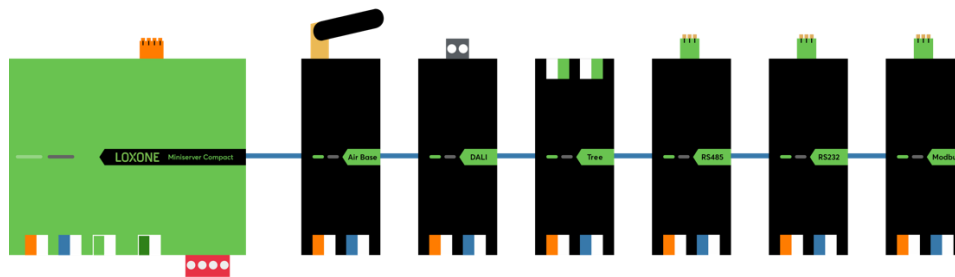
The following topologies are possible with a maximum cable length of 1,640ft:



<https://www.loxone.com/enus/kb/tree-extension/>

Link

The Miniserver can be extended individually, depending on the project requirements. Via the so-called Link interface, the Miniserver can be expanded with up to 30 extensions with additional features such as inputs and outputs and numerous interfaces. The Link wiring must be linear. The Link is the bus connection in the distribution.



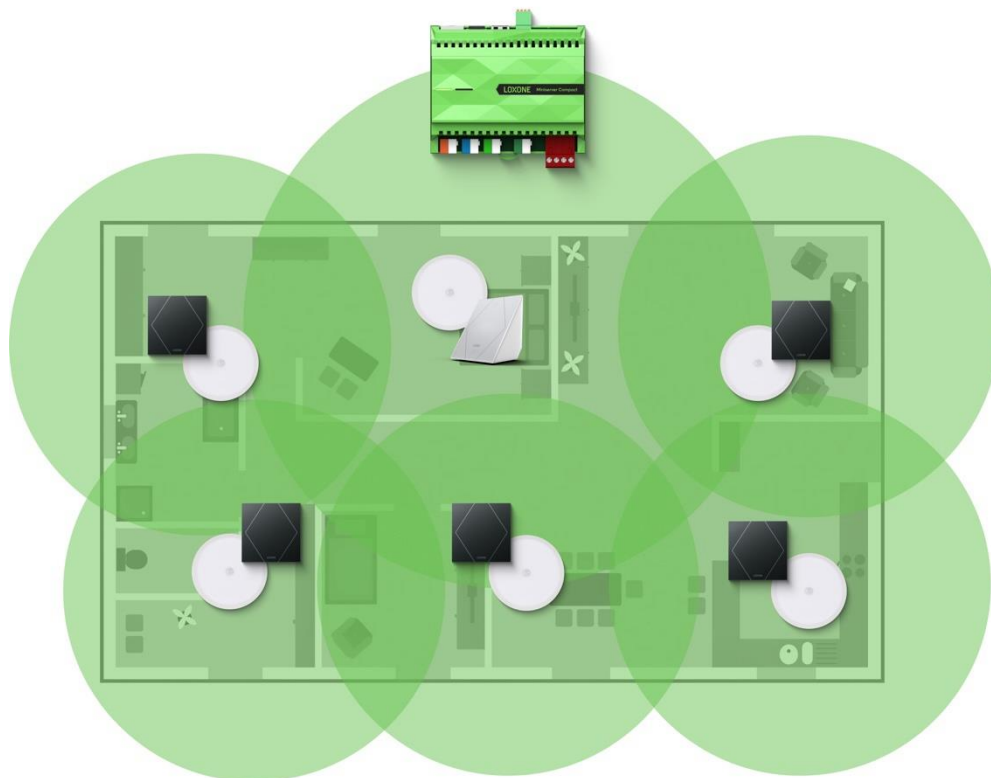
<https://www.loxone.com/enus/kb/link/>

Air

The Loxone Air wireless technology has been specially developed for those who do not have the opportunity to lay cables and yet do not want to do without modern building automation.

Loxone Air uses the so-called mesh technology. Any product with a permanent power supply increases the range and stability of the overall system.

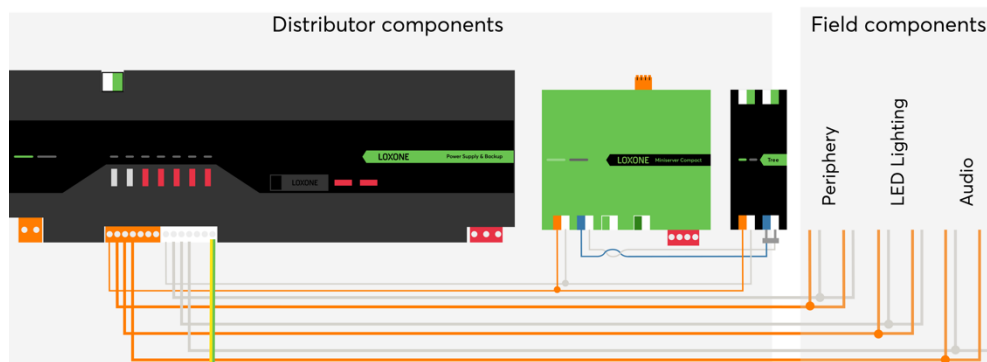
The Loxone Air wireless interface allows you to connect up to 128 Air devices. It is provided by the Air Base Extension, the Miniserver Compact, Miniserver Go, or – for up to 49 Air devices – also by the Tree to Air Bridge. Loxone Air has been specially designed for building automation and is able to integrate a large number of compatible devices.



<https://www.loxone.com/enus/kb/air/>

24V DC Supply

The operating voltage for Loxone products is 24V DC. A division of the 24V supply into several circuits is strongly recommended, as with 230V. This effectively prevents a total failure of the subsystem in the event of a short circuit or overload. The Loxone products are suitable for a PELV as well as SELV installation, we always recommend choosing the PELV installation, since a SELV installation is often not possible because an unwanted connection with the protective conductor (PE) is created via devices or earthed cable shields. In the event of an indirect lightning strike, this leads to high equalizing currents via electronic devices and can damage them.



Our recommendation:

To ensure that a building offers maximum flexibility, expansion and stability, numerous Miniservers at the Loxone Campus communicate via various communication methods.

We recommend separate 24V DC circuits for:

- > Miniservers and Extensions
- > Field components (presence detectors, touch, etc.)
- > LED lighting
- > Audio



<https://www.loxone.com/enen/kb/power-supply-backup-monitor/>

Installation

Periphery & Network

The network design can be flexibly adapted to your specific project requirements. However, it is important that the Miniservers are allowed to communicate with each other. This communication can be implemented either via routed subnets or within a single network. A prerequisite for a successful and fast installation is a fully functioning network.

Good to know:

In the Loxone Campus, the following network segments were implemented as VLAN:

- > General office space
- > Warehousing & logistics
- > Owner level
- > Hotel & restaurant
- > Infrastructure (cold rooms, ventilation, ...)
- > Experience Zone

Communication is allowed between these segments.

Manifold Components

An existing network infrastructure greatly simplifies the installation process. If the Miniserver and the computer from which the Miniserver is configured are located in the network (even without an active internet connection), the Miniserver can be easily and quickly identified and taught.

Good to know:

In a company with a professionally managed network, we recommend:

- > Assign a static IP address to the Miniservers
- > Assign a logical host name to the Miniservers
- > Miniserver Network Documentation

To be able to get a quick overview in the event of an error, we rely on clear and structured labeling at the Loxone Campus. As an example of this, we have set the hostnames of the Miniservers and Audioservers according to a specific scheme.

MS	HO	U10
Miniserver	Hotel	Subdistribution 10
ACE	GL	BA
Audio Server	Glorious Bastards	Bar

This makes it possible to see at a glance which device it is, what it is responsible for and where it is located.

After the successful installation of the Miniserver, the connected extensions can now be searched for and found. Here, too, it is important to ensure precise labelling/documentation.



<https://www.loxone.com/enus/kb/tree-branch/>

Field Components

All Loxone field components are equipped with a status LED. This indicates whether the wiring has been carried out correctly.

Red/green fast flashing	Device is identified
Flashing green	Device is ready for use
Orange flashing	Wiring is fine. However, the device has not yet been taught-in
Flashing red	Wiring is out of order.



<https://www.loxone.com/enen/kb/initial-setup-miniserver/>

In the Spotlight: LED Spots

The Loxone RGBW Tree LED Spots are equipped with a special mode for installing. This mode makes it possible to check the functionality of the connection during installation: a green LED indicates a working connection, while a red LED indicates a faulty connection.

Good to know:

This feature has proven to be very useful, especially in the auditorium at the Loxone Campus. Here, the use of a lifting platform was necessary for the installation of the spots, which made it much easier to immediately check the correct wiring.

Labeling and Documentation

Control Cabinet Components

The correct labeling of the Loxone peripherals is essential and at the same time forms the basis for the documentation. In the Loxone Config, both row and position can be stored in the distributor. This, in combination with the status LED, ensures that the devices can be easily identified later.

Installation location	
Installation location	
Panel	8 Space
Row in Panel	1
Position in panel row	2

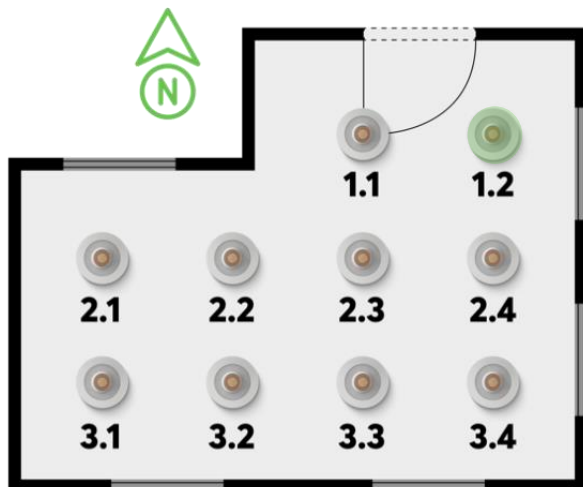
Example: Miniserver in Space 8

Field Components

If the installation location of the field components is clear and the device acts where it is mounted, the position is indicated in the "Designation" field. In this example, it is an LED spot in the room "8 Box N" in the first row, second position. The numbering always starts in the cardinal direction north to south. The [LED spots](#) are numbered from left to right: 1.1 / 1.2 / 1.3 / 2.1 / 2.2 / 2.3.

General	
Name	1.2
Description	
Hint Text	Edit...
Connection	13000001.21.13114F5F.0.B038AE66
☐ Display Diagnostic Inputs	
Category	Lighting
Room	8 Box N
Object Type	Tree Device
Extension	Tree Extension (Schaltschrank R01 P03,...
Lighting Group	Spots (8 Box N)

Example: LED spot in the area "8 Box N" in the first row in the second position



If the device, such as a Nano 2 Relay Tree, which is responsible for opening the front door, is not installed in the place where it operates, the installation location must be specified. In this case, the relay that opens the entrance door to the underground car park is mounted in a terminal box in the entrance area.

General	
Name	Entry Door Underground Car Park
Description	
Hint Text	Edit...
Connection	13000001.21.13114F3D.1.B03FCBA9
☐ Display Diagnostic Inputs	
Room	Lounge Staircase
Object Type	Tree Device
Extension	Tree Extension (C-Level R01 P05, 13:11:...
Settings	
☒ Monitor online status	
Serial number	B0:3F:CB:A9
Device type	Nano 2 Relay Tree
Application	Universal
Threshold for current detection [mA]	100
Installation location	
Installation location	Terminal Box Entry Way Downstairs

Maintenance & Service

Loxone Exosphere

Loxone Exosphere will be an innovative, cloud-based platform that aims to revolutionize the management and maintenance of Miniserver fleets in various locations. Complementing existing Loxone products, Exosphere will offer the following key features:

- > **Device Management:** Users will be able to maintain all Miniservers at the same time. This includes features such as updates and backups, which can be performed for individual Miniservers as well as in bulk for entire fleets.
- > **Collaborate:** Exosphere will enable the creation of workspaces where teams can collaborate and manage tasks efficiently. With the Loxone Config Cloud Connector, users will be able to store projects in the cloud and make them accessible to team members. A built-in Credential Manager will provide end-to-end encrypted storage for passwords and connection information.
- > **Observe:** Users will be able to quickly search and analyze data from Miniservers and display it in different types of charts. Fully customizable dashboards will provide a comprehensive view of key data, and system schemas will make it possible to graphically display the system data of Miniserver fleets.

Exosphere will be available in three editions – Essentials, Pro, and Enterprise – that differ in feature set and pricing structure to meet different needs. While the Essentials edition will be designed for basic maintenance tasks and will be free, the Pro and Enterprise editions will offer advanced features for commercial users, including more comprehensive data monitoring and management.

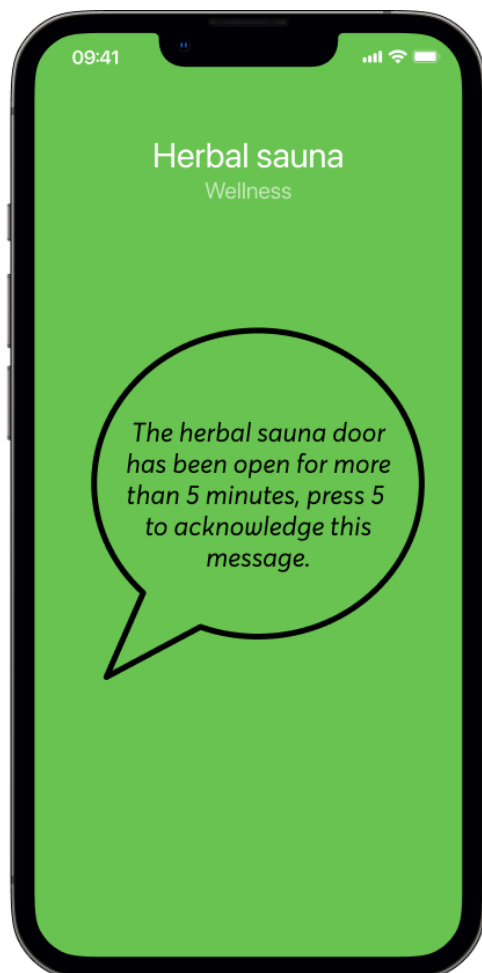
In summary, Exosphere will be a powerful solution for Loxone Partners and commercial users to efficiently manage, maintain and monitor extensive Miniserver fleets.

Alarms & Error Messages

Technical Alert

Technical glitches can spoil the guest experience or cause significant damage. For example, a sauna that is too cold due to a door left open is an (energy-intensive) nuisance for the guest, while a failure of the cooling technology in the restaurant area can cause considerable monetary damage.

That's why, with the Loxone Miniserver, we offer numerous options for simple and effective alerting in the event of technical malfunctions. An effective way to draw attention to a malfunction is to call the alarm. The Miniserver can activate an alarm chain.



Alarm chain:

- > Reception
- > In-house technician 1
- > In-house technician 2
- > Hotel manager
- > Owner

Loxone Caller Service

Alarm

An intelligent building equipped with Loxone equipment reliably detects whether a person gains unauthorized access to an area and reports this reliably. The 360° safety system senses leaking water, warns of hazards such as fire or smoke, thus ensures optimal safety.

TOP FEATURES

- > Any number of alarm zones
- > Presence simulation
- > Logging function
- > Opening status of windows and doors

Our recommendation:

If an area is not protected via access control, the Miniserver can be used to provide a discreet alarm in the event of unauthorized entry. If, for example, a guest enters the wellness area outside of regular opening hours, the system can activate reduced lighting. In addition, a text-to-speech (TTS) message is generated and output via the audio system, informing the guest that he or she is in the area outside of the intended usage times.

Power Outage/Network Failure

The entire home and building automation system must be designed to be fail-safe. This means that the system has the property that in the event of a fault (power failure) there is no damage. In practice, this means that after a power failure, the entire system resumes its service on its own without the intervention of a technician.

Tips for a reliable system:

- > Static IP addresses of all network components
- > Fail Safe Mode
 - e.g. ventilation to 50% if network fails
- > Avoid dependencies
- > Remanence (the state before a power failure is automatically restored)

Connection to Third-Party Systems

Interfaces

Loxone is an open system. Regardless of the manufacturer and the area of application – if a product has a suitable interface, it can be integrated into the Loxone building automation system. Whether ventilation systems, TVs, KNX peripherals...

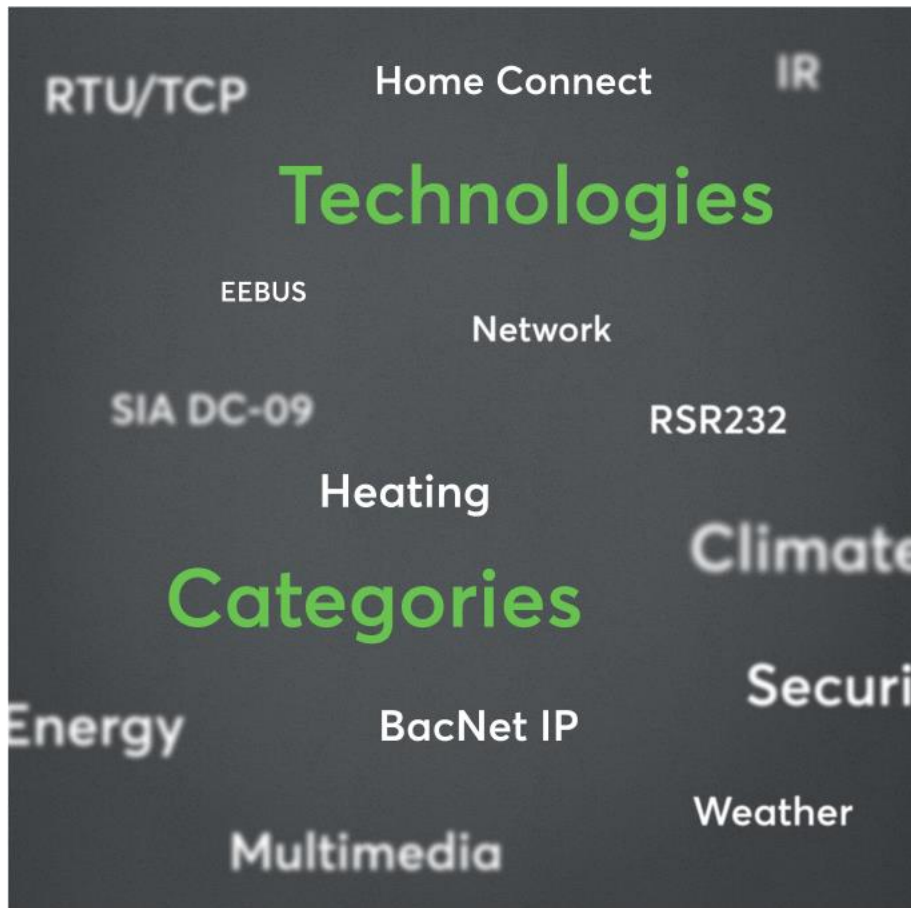


Extensions & Protokolle

Tree	Air	Digital Input/Output	Analog Input/Output	M-Bus
ModBus RTU	ModBus TCP	RS232	RS485	DMX
Internorm	Fröhling	Schüco	1-Wire	EnOcean
Infrared	EEBus	BacNet IP	Network (LAN)	SIA DC-09
Apple HomeKit	Apple AirPlay 2	Home Connect	Miele@home	KNX

Library

Thanks to the open Loxone system, you can develop your own templates for our interfaces and make them available to the world via our Loxone Library.



<https://library.loxone.com>

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Notes

DRAFT

