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Applications for correctional facilities

Greater efficiency and cost-effectiveness with
GAMMA building control



Successful management of correctional facilities

Extremely high demands are placed on modern correctional facilities. Security and energy efficiency are two key concerns. Prison-cell systems should be easily manageable and protected from manipulation. All areas within the prison should provide optimal conditions for the efficient management of the facility in a cost-effective manner.

The key to achieving this? GAMMA *instabus*, a building management system based on the international KNX standard that intelligently combines various building system functions.

Efficient building management for modern and secure correctional facilities

■ Economic management of correctional facilities

With GAMMA *instabus* you enjoy all of the advantages offered by state-of-the-art building technology: energy-efficient and cost-effective facility management; the preventative safeguarding of people and property; as well as sophisticated yet easy-to-use building system controls. GAMMA building management systems are the right choice for efficiency, safety, and comfort. A wide range of activities take place within a prison. An intelligent building management system specifically caters to each of these activities.

■ Ensuring efficiency over the long term

GAMMA *instabus* provides for the intelligent integration of all electrical functions within a prison complex – whether for new prison construction, or the expansion or renovation of an existing facility – thus enabling energy-efficient and cost-effective operations. The system provides for the optimal need-based management of lighting, heating, cooling, and ventilation systems – 24 hours a day. This reduces operating as well as personnel costs.

■ In case of danger

Security is a topic of key importance at a prison – for the protection of correctional officers, prisoners, and property, as well as to avoid damages and minimize incidental costs. Emergency and escape lighting as

well as fire- and intrusion-alarm systems are centrally controlled by GAMMA *instabus*. This ensures the comprehensive monitoring of key hazards, as well as a rapid, focused, and correct response in the event of emergency.

■ Improving the workflow

The economic efficiency of GAMMA *instabus* becomes clear when we look at what happens when usage conditions change. The system can be quickly and easily adapted to the usage requirements that prevail in each area of a correctional facility. GAMMA *instabus* was developed from step one with an eye to intuitive and user-friendly controls. The system is easy to use, despite its many functions and flexibility. It is operated via touch panels, remote control, operating displays, and switches, as well as from a central visualization PC.

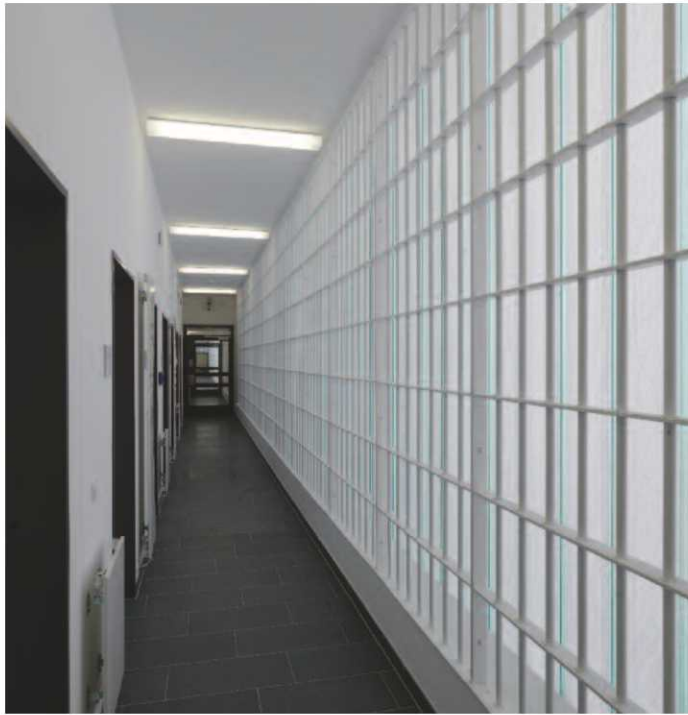
■ Installation solutions from a single source

As an all-round provider in all matters to do with building installations, we offer anything from energy feeds down to the outlets – we're here to provide a comprehensive solution, tailored to the requirements of your building. GAMMA *instabus* ensures maximum safety and comfort for correctional facilities in a cost-effective manner.

Highlights

- Reliable operation
- Lower energy and operating costs
- Enhanced prison operations
- Preventative safety
- Secure against manipulation
- Protects lives and minimizes damage in the event of emergency





Presence-based lighting saves costs, without sacrificing security.



Functions can be operated from a central control room. This considerably simplifies prison management activities.

Where cost-effectiveness is at home

GAMMA *instabus* lowers energy and operating costs while also assisting prison management activities.

■ Centralized visualization

With its central visualization, GAMMA *instabus* provides an up-to-date picture of the whole building and the operation of all building functions. This promotes the efficient management of the building.

■ Building management of remote real estate properties

The connection to existing data networks (LAN and Internet) or a building control system allows the building management to spread across several buildings, whether within a prison complex, within a city, or across international borders. Remote real estate properties can optionally be administered with ease thanks to real-time status information.

■ Centralized monitoring

The central monitoring of several correctional facilities reduces staff overhead – without GAMMA *instabus* causing additional installation costs.

■ Damage prevention by early fault signals

Error messages regarding energy distribution, from heating, cooling or ventilation installations are immediately picked up and passed on – for example, to the cell phone of a technical manager. Speedy elimination of the fault prevents costlier measures becoming necessary down the line.

■ Maintenance according to need

Maintenance and repair prioritized according to need are made possible by the counting of operating hours and switching cycles, as well as failure reports, e.g. from DALI-ECGs.

■ Shut-off of unneeded consumers

To reduce energy costs, energy consumption data can be gathered for analysis, peak loads capped and unneeded energy consumers switched off.

■ Using daylight without glare

Light and shade are controlled in administrative and guard rooms such a way that

optimum use can be made of existing daylight while preventing glare. Having the light switched on and the blinds closed is a situation that we avoid as much as possible. Electricity is saved. To make this happen, the blinds automatically adjust according to the position of the sun.

■ Blinds with daylight steering

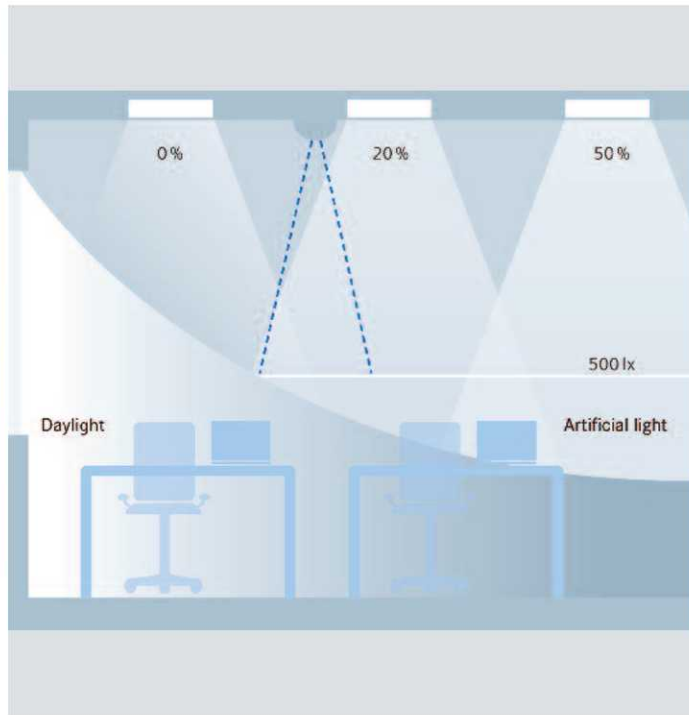
Highly modern blinds with daylight steering can be integrated into these controls.

■ Constant light regulation

A constant light regulation only permits the amount of artificial light actually needed in the room. Of course you can always manually adjust the light to suit your needs.



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A constant light regulator that incorporates daylight only supplements as much artificial light as is necessary – less light closer to the window, more light closer to the wall.

■ Lighting according to presence

If guard or conference rooms are not in use, the light is switched off altogether. The lighting can be controlled by presence sensors, by being connected to an entrance control or a timer, or manually. Outside of core usage times, hallways and bathrooms in particular are only illuminated when in use. During core usage times, an adjustable minimum lighting level is maintained when no one is present. Within the core usage times, a variable minimum brightness is maintained when nobody is present. Thus optimum energy savings can be attained, while increasing light bulb durability.

■ Heating, cooling, and ventilation according to need

Heating costs are a major factor in a building's operating costs. GAMMA *instabus* reduces these costs significantly, by only fully heating, cooling or ventilating guard and conference rooms, administrative areas, and cells when they are actually in use. The room temperature can be controlled by motion sensors, core usage times, by room-based utilization plans or manually.

■ Reduction of heating in case of open window

As long as windows are open, the heating is automatically lowered to frost protection level, and cooling and ventilation reduced or deactivated altogether.

■ "Central off" for heating, cooling, and ventilation

At night, a "central off" setting can reduce heating, cooling and ventilation to protection mode.

■ Usage changes without rewiring

The economic efficiency of GAMMA *instabus* becomes clear when we look at what happens when usage conditions change. When room sizes are altered, organizational changes made, or new equipment installed, a costly rewiring won't be necessary. Changing the parameters is all that's required in most cases, and functions and connections are simply reassigned. Expensive vacancy times caused by complex modifications are thus reduced significantly.

Highlights

- More efficiency in building management
- Cost-effective use of light and shade
- Room temperature based on use
- Flexible adaptation to changed room usage

■ New functionality easily added

Should an expansion of functions become necessary down the line, this is possible without a hitch thanks to the decentralized concept of GAMMA *instabus*. An additional push-button control, for example, only requires a bus lead for it to be able to operate any room function you require.



Windows left open accidentally can be identified and closed before they pose a risk.



Lighting of exteriors and walkways can be easily controlled with GAMMA *instabus*.

Security comes first

GAMMA *instabus* – 24/7 protection of people and property, to avoid damages and minimize incidental costs.

■ Presence-dependent corridor lighting

Accidents due to inadequate lighting can easily be avoided. If corridor lighting is switched on when a person is in the corridor, then the right lighting is always there when it is needed.

■ Exterior and walkway lights

Lighting of exteriors and walkways can be made dependent on brightness, movement or time, and so is always activated on time.

■ Switching off of devices centrally according to presence

To avoid damages caused by unsupervised electrical devices, these are switched off centrally at night.

■ Identification of windows, roof hatches, or doors left open

Windows, roof hatches or doors left open over night or weekends can cause significant damage in case of storm, rain or frost. The indication of “open window” or “open door” makes sure that you can close these in time.

■ Emergency and evacuation lighting

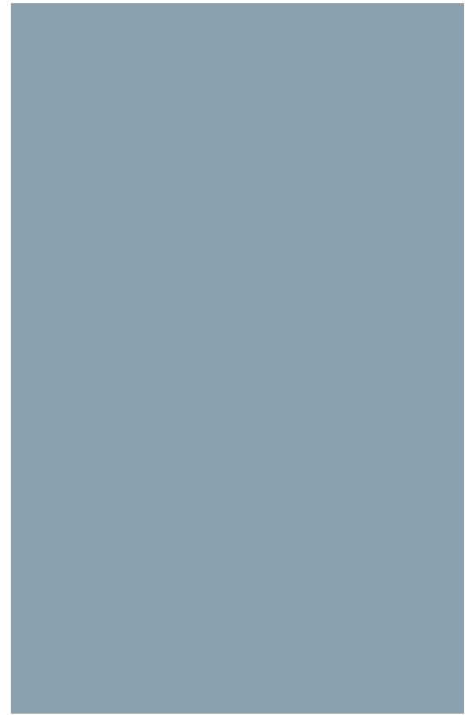
In case of danger, everyone in the building is safely guided outside with the emergency and evacuation lighting based on GAMMA *instabus* and installed according to EN 1838.

■ Reaction in case of fire alarm

If the fire alarm system is connected to GAMMA *instabus*, individual electric consumers can be switched off before they become an additional hazard. The complete lighting system can be turned on, thus reducing danger of panic.



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In the event of a fire alarm, lighting is switched on and electrical devices switched off systematically.

■ **Visualization shows location of danger**

Fast and proper reaction in case of danger is possible with visualization that shows where the event is taking place.

■ **External building monitoring**

Building areas not used at night can be monitored remotely from other parts of the building with GAMMA *instabus*.

Highlights

- Better to prevent damages than repair them
- Emergency and evacuation lighting
- Visualization shows where dangers are located

Emergency lighting leads the right way to safety and away from danger.





Prison cells are functionally optimized with the building management system GAMMA *instabus*.



Presence-based extractor fan systems ensure a pleasing room climate in sanitary areas.

Thoughtful solutions throughout

An intelligent building management solution should specifically cater to each of the many activities within a correctional facility. GAMMA building management systems provide the necessary multitude of functions.

■ Prison cells

– Compulsory lighting

When the key switch outside of a cell is operated, the cell light is switched on and cannot be turned off from the inside. The prisoner is thus prevented from staging a sudden assault in the dark, which helps to protect correctional officers.

– Time-dependent cell lighting

After a certain predefined time the overhead lighting will be switched off automatically – only the bedside reading light remains available.

– Switch lock

Switches will be automatically locked after excessive use in a short period of time in order to prevent messages from being passed via Morse code.

■ Guard rooms:

Override controls

A panel allows guards to override cell, and corridor functions and to control the key switches. A direct use is no longer possible.

■ Gate post:

Visualization

The system controls located at the gate post have ultimate authority, allowing specific areas of the prison, even the guard room, to be shut down should prisoners take control of part of the complex.

■ Workshops:

Optimal working conditions

Lighting, shading and room climate are optimally managed.

■ Administrative and conference rooms

– Room and media functions

Administrative and conference rooms are rooms with extensive technical equipment. With GAMMA *instabus*,

the room and media functions are easy to control and operate.

– Scenario control

With the touch of a button, the entire conference hall can be switched to the current mode of use (scene control). For example, while giving a presentation, you could lower the blinds, roll out the projection screen, turn off the light in the area surrounding the screen, lower the lights in the rest of the room to 10% and turn on the digital projector – by one touch of a button.



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Optimal lighting and room climate in visitation rooms.

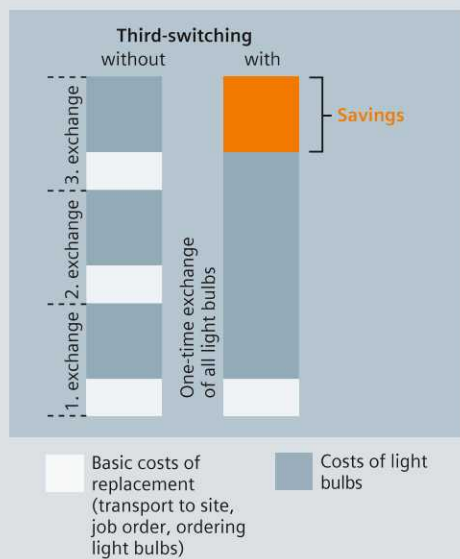
- **Remote scenario control**
The individual holding a conference or presentation can select and activate various scenarios remotely, regardless of his or her current location.
- **Automatic deactivation of outlets**
The automatic deactivation of outlets and devices connected to them outside of defined usage times increases safety and cuts down on costs.
- **Canteens or sanitary areas**
- **Extractor fan system controlled by presence**
An extractor fan system that is activated when people are present contributes to a good room climate and saves energy.
- **Water sensors**
Water sensors recognize and provide early warnings in the case of leaks and flooding.

Socket outlets in kitchens are automatically shut off outside of usage times, thus saving energy.



Highlights

- Prison cells equipped based on use
 - Control maintained at all times from guard rooms
 - Optimal conditions for correctional officers and prisoners
- **Presence-based lighting**
Motion detectors can be used to activate lighting in bathrooms and showers.
 - **Garages/underground parking garages**
 - **Lighting based on presence and main usage times**
In garages or underground parking garages without daylight, lighting can be controlled dependent on main usage times and presence. When people are present, lighting is switched to full



The longevity of light bulbs is increased thanks to the "third-switching" method. Resources are conserved and costs reduced.



GAMMA *instabus* tracks the operating times of each light fixture in all rooms.

brightness in the respective area. When nobody is present, lighting is reduced to minimal brightness or, outside of main usage times, switched off completely. This cuts down on energy costs and increases the light bulbs' longevity.

– **Third-switching**

With GAMMA *instabus*, a so-called "third-switching" can be implemented: A third of the lamps remains switched on for a basic lighting level. This third of the light bulbs, due to their higher usage, will need to be replaced before the other light bulbs. GAMMA *instabus* makes it possible to simply use all the lights in such a way that they rotate to cover the basic lighting level. By evenly distributing the load, all light bulbs can be replaced at the same time, and the exchanges in the meantime will not be necessary.

– **Tracking of operating hours**

GAMMA *instabus* tracks the operating hours of each fixture and provides notification when light bulbs are to be replaced.

– **Notification of defective lighting**

Notification is sent to building maintenance when a light fixture no longer works.

■ **The right controls for every task: Appropriate user interfaces for every need**

The best technology is useless if it is difficult to operate. GAMMA *instabus* was conceived and designed to be so user-friendly so that all users can quickly master its operation. Despite its impressive range of functions, the system is very simple and comfortable to use: from the familiar switches, remote controls, operating displays, touch panels or via a central visualization PC.

Highlights

- Efficient malfunction and maintenance management
- Cost-effective use of prison resources and equipment
- Optimized user interfaces



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All functions at a glance

Economy	Special features
Centralized visualization	... in prison cells
Building management of remote real estate properties	Compulsory lighting
Centralized monitoring	Time-dependent cell lighting
Damage prevention by early fault signals	Switch lock
Maintenance according to need	... in guard rooms
Shut-off of unneeded consumers	Override controls
Using daylight without glare	... at gate posts
Blinds with daylight steering	Visualization
Constant light regulation	... in workshops
Lighting according to presence	Optimal working conditions
Heating, cooling, and ventilation according to need	... in administrative, conference rooms
Reduction of heating in case of open window	Room and media functions
"Central off" for heating, cooling, and ventilation	Scenario control
Usage changes without rewiring	Remote scenario control
New functionality easily added	... in canteens, sanitary areas
	Extractor fan system controlled by presence
Safety	Automatic deactivation of outlets
Presence-dependent corridor lighting	Water sensors
Exterior and walkway lights	Presence-based lighting
Switching off devices centrally according to presence	... in garages/underground parking garages
Indication of windows, roof hatches, or doors left open	Lighting based on presence and main usage times
Emergency and evacuation lighting	Third-switching
Reaction in case of fire alarm	Tracking of operating hours
Visualization shows location of danger	Notification of defective light bulbs
External building monitoring	... and the right control for every task
	Appropriate user interfaces for every requirement

■ Would you like to learn more?

Are you interested in the applications described in this brochure for your prison project? If so, your Siemens partner will be happy to assist you and provide additional information.

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The information in this document contains general descriptions of technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

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Answers for infrastructure.

Our world is undergoing changes that force us to think in new ways: demographic change, urbanization, global warming and resource shortages. Maximum efficiency has top priority – and not only where energy is concerned. In addition, we need to increase comfort for the well-being of users. Also, our need for safety and security is constantly

growing. For our customers, success is defined by how well they manage these challenges. Siemens has the answers.

“We are the preferred partner for energy-efficient, safe and secure buildings and infrastructure.”