spega e.control
Room Automation

System Overview

safesquare

Expertise in Room Automation

Into the Future

Room automation is of decisive importance for the energy efficency, flexibility of use and ergonomics of commercial buildings. Our room automation system e.control, which is today one of the most comprehensive and functional systems of its kind, was developed based on these requirements.

In 2019 safesquare took over the room automation system spega e.control. This means that we will continue to be committed to the development and sales guidelines to which the e.control system owes its current position:

- Clear focus on customer benefits
- Maximum functionality with easy commissioning
- Consistent use of open technologies
- Active participation in creating norms and technical standards
- Clear market position and fair partnership

Focus on Customer Benefits

For our product management, customer benefit is the top priority, i.e. our products must improve the sustainability of buildings, in terms of ecology, economy and functionality. Although e.control provides a large number of complex automation functions in the devices for this purpose, commissioning and operation should be as simple as possible. That is why many man-years of development have gone into the modular hardware and software concept and into powerful commissioning tools.

Open Solutions

In order to protect our customers' investments, we consciously rely only on open standards from building automation and IT environment. The result: e.control seamlessly and uniquely combines the best-in-class technologies BACnet, LON, DALI, SMI, MP-Bus and EnOcean into one system.

Partnership

Our market positioning is as consistent as our development. Our sales team, consisting of experts with many years of experience in electrical engineering and building automation, together with the technical support team, manages our system partner network. In addition, we aim to inform building owners and investors about the sustainability and cost advantages of room automation and to be a competent contact for specialist planners. We see the key to a successful future in this cooperation with our direct and indirect customers, which is based on long-term and fairness.

M-Series - the modular system

+49 2191 56814 0 | +49 2191 56814 89 | sales@spega.com

Increasing Energy Efficiency, Reducing Costs

e.control Provides Added Value

Commercial buildings offer their users not only appropriate working environments, but are also capital investments. Their cost-effective operation with low energy consumption makes a significant contribution to the retention of their value. e.control by spega helps.

Save Energy Automatically

As a highly functional room automation system, e.control ensures that all rooms use as little energy as possible, without reducing comfort. To do this, it combines heating, air conditioning, ventilation, lighting and sun protection into a perfectly working team that reacts continuously to the current needs of the room and avoids any waste of energy. Heating with the windows open, lighting turned on in an empty room or a room supplied with daylight, are now permanently a thing of the past.

Top-Level Energy Efficiency

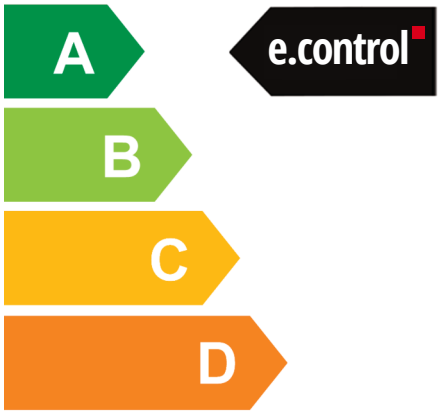
e.control masters energy savings so well that it meets the standards of the highest EN 15232 building automation efficiency class, Class A, for all building types and for all technical equipment variants. It makes e.control the first and only choice for sustainable buildings.

Cost-Effectiveness Guaranteed

The fact that energy savings reduce life cycle costs is well-known. How quickly and how reliably that works with e.control will convince you. The amortisation period is only a few years, since in comparison with conventional technological equipment, high savings of up to 35% are achieved with only slight investment.

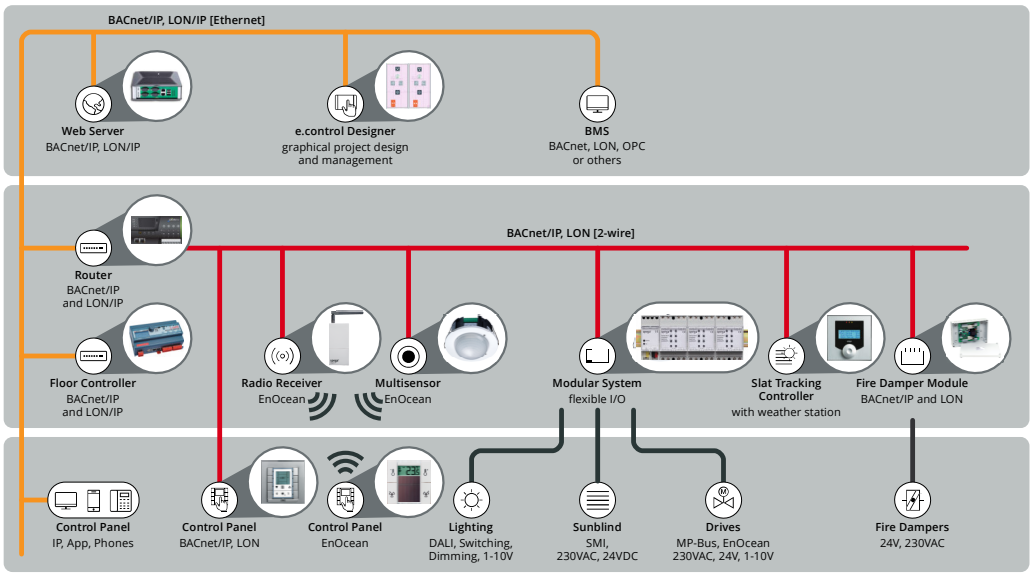
Advantages

- Retention of value by economical building operation
- Stops wastes of energy by continuous adaptation to requirements
- Reduction in energy consumption by up to 35%
- Meets the requirements of the highest EN 15232 building automation efficiency class, Class A
- Short amortisation time



e.control meets the requirements of the highest EN 15232 efficiency class, Class A

Best-in-Class as Principle



The e.control room automation system enables end-to-end BACnet/IP communication.

Direct BACnet/IP communication from the management level (e.g. BMS) to the field level can be implemented without gateways. The e.control devices provide the BACnet/IP system with corres-ponding communication objects for the relevant data points. Complex programming of the BACnet connection can thus be avoided.

Only the Best is Good Enough

That's also true for the e.control room automation system. This includes the optimum integration of field devices and connection to other building automation equipment, such as management or automation stations, using suitable communications protocols. e.control is specifically designed to use the best technologies in the right places, that is, best-in-class as a design principle. It makes integration so seamless that transparent access down into the field level is consistently provided.

BACnet

As a protocol between the management and the automation levels, BACnet/IP can now be considered a standard. As a novelty, e.control products will natively support BACnet/IP at the field and management level (box on the right). In addition, e.control has BACnet floor servers that automatically group all necessary data and management objects (such as time programs or trends) and provide them by room. That makes the integration of e.control into the management level child's play.

LON

LON is the most powerful technology for large control networks with many hundreds or even thousands of devices and is therefore ideally suited for room automa-tion. With its high performance, the unique concept of functional software objects and a unified engineering database, LON represents the ideal integration platform even for the most complex automation tasks in the e.control system.

DALI

DALI is the standard for the control of lighting. The advantage, aside from the option of variable group assignment, is also the provision of error responses if a light or ballast should fail. e.control DALI actuators can each control up to 128 lamps in up to 32 groups.

SMI

SMI is the counterpart of DALI in sunblind technology. Here, too, groups and error detection are supported. The drives can also be positioned with absolute accuracy and are nearly inaudibly quiet in alternating operation, which makes them a natural for energy-efficient slat tracking control. The certified e.control SMI actuators, available in 230V or 24V variants, can control up to 32 drives with free group assignment.

EnOcean

EnOcean is the no-battery radio standard in building technology. e.control offers an extensive operating and sensor line in the EnOcean technology. e.control EnOcean receivers are equipped with the same functional scope as wired system units, so there are no penalties in terms of energy efficiency or flexibility.

New: BACnet/IP end-to-end

Thanks to the new multi-protocol functions of LON technology, IP protocols are supported on all media. e.control products support BACnet/IP including tools based on Free Topology (FT). The time-consuming creation and assignment of data objects and the use of gateways are thus a thing of the past. The design and implementation of open systems based on BACnet, LON, DALI, SMI, EnOcean and MP-Bus are greatly simplified.
e.control combines the fragmented protocol landscape with the best-in-class technologies into one system.

MP-Bus

MP-Bus controls positioning drives for ventilation and air conditioning technology. In addition to the actual position responses, each drive also provides an error status and optionally the measured value of a connected sensor. The e.control MP-Bus actuators can control up to 16 drives and return values from 16 connected sensors to the network.

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New Systems and Retrofit

All the advantages of a room automation system - ecological, economical and functional - apply to both new systems and modernization projects. Nevertheless, different conditions require corresponding, suitable concepts. The result is state-of-the-art, energy-efficient buildings equipped with high benefits.

Modern New Systems

The installation is usually wired, unless building conditions require wireless solutions. If flexible room layouts are required over the operating time of the building, axis-oriented connections should be used. Modern systems allow for subsequent conversion, including changes to walls. The necessary functional changes in the overall system should be easily carried out by the operating personnel themselves. For the e.control system, the e.control Designer is used for this purpose.

Modernisation

Existing installation preconditions are used for the modernisation of existing systems. Radio solutions can be a decisive element in the overall concept. Modernised systems are in no way inferior to corresponding new systems. Thanks to native BACnet/IP support, even older existing systems can be retrofitted with high performance. If existing LON systems are to be replaced, intelligent migration concepts come into play with e.control, so that investment costs and operating costs / times can be reduced to a minimum and economic maintenance concepts can be optimally combined with the modernisation requirements.

Flexible Office Buildings

The architecture of modern office buildings is characterised by floor plans with axial grids that permit the flexible movement of the walls. Even during usage phases, it should be possible to change rooms without having to make changes to the wiring of the room automation system. To allow field devices like lights, blinds, and heating/cooling ceilings that are installed in segments to be integrated flexibly into the automation system, e.control system distribution boxes can be used with devices in the M series. Each room is additionally equipped with a lumina MS4/RC radio multisensor, which not only integrates the radio sensors and buttons, but also handles the regulation of all systems. Moreover, the dialog Web server can be used for control from each workstation.

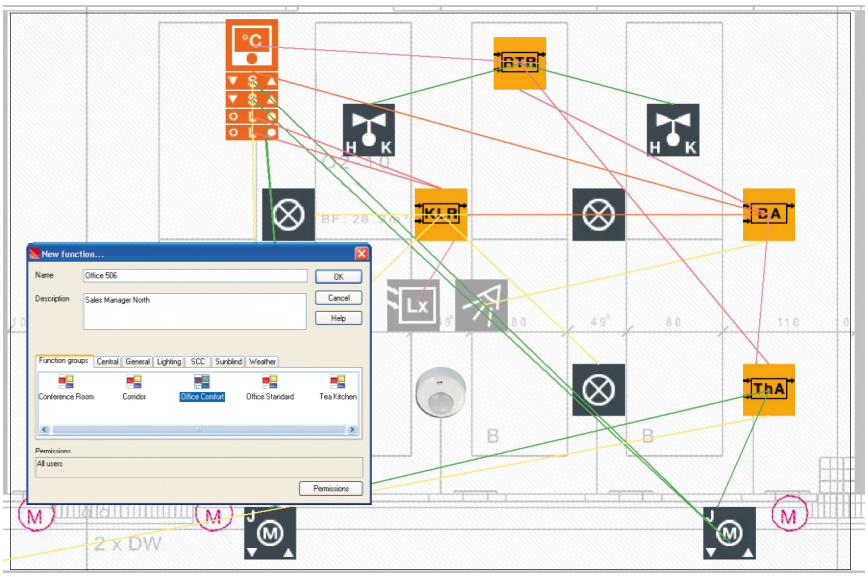
Hotel Rooms

For the efficient use of energy, heating and cooling in hotel rooms is adapted to room occupancy and window use. While fixed introduction is preferred in new construction, the renovation solution uses the approach of using only minimum installation times in order to avoid restricting the availability of the room. The demand-based control of the fan coil unit is handled by the universal room controller, which is equipped with a wall control device and a hotel key card holder, and is connected to the hotel booking software using the network. While wired devices can be connected directly to the controller in new construction, radio sensors are also available for renovation that can contact receivers in the corridor to send packets through the network to the corresponding room controllers. Via an output of the controller, the lighting can be switched off with a time delay when the hotel card is removed and switched on again when it is inserted again.

Fixed Rooms

In buildings with fixed floor plans, installation is often planned and assigned on a system-by-system basis. The installation of room climate control and the control of lighting and sun protection are separate tasks. For room climate control, an universal room controller can be used. Equipped with multisensor and IR remote control, it can also provide the sensor data and operating requests for light and sun protection. Their operation is then handled by actuators in the R series, which are installed in the classical manner at the local level. The high degree of functional integration means that here, too, no functional desire is left unfulfilled.

Functionality without Limits



The function library of e.control Designer contains a huge selection of room functions for all systems. Project-related, these functions can be combined to function groups (room macros) and then applied to all rooms.

The figure shows, for example, a 2-segment space of the BAC efficiency class A with all sensors (light grey), actuators (dark grey), controllers (yellow) and operating functions (orange).

Functional Guarantee

All e.control devices have tested, highly function software objects that need only be parameterised appropriately to their tasks. Since all objects from spega are not only tested for internal functionality but also for appropriate system behaviour together, e.control represents a true functional guarantee. That makes e.control essentially different from programmable system solutions in which the entire functionality must be provided by the system integrator only during the course of the project.

Uniformity Provides Clarity

All e.control software objects are based on VDI 3813, the world's leading standard for room controls, and therefore meet the requirements of a very specific functionality, for example, the regulation of the room climate or the lighting. They can be so extensively parameterised that they can be adapted to any local variants. And because each of these objects is exactly identical on all e.control devices, the system integrator and operator immediately have a perfect overview that provides a uniform functional model even when different devices are used.

Room Climate Control

The conditioning of the room climate is handled by the room climate controller in the e.control system. It is suitable for all heating/cooling systems, whether cooling ceilings, radiators, forced-air fans, cooling bars in facade ventilation units or air-bearing (VAV) systems, and can be used with any type of valve or flap drives. It also controls air quality and free (night-time) cooling, even optionally using a mechanical air intake system or outdoor air flap. Adaptive start optimisation, summer or winter compensation, automatic temperature averaging, etc. are more options that can be added. In combination with an air humidity sensor, the dew point temperature can also be determined, to ensure that the cooling is turned off when necessary. Thermal automation also works together with the climate regulator and uses the sunshade as additional support for heating or cooling.

Lighting Regulation

Even in lighting regulation, there are numerous application cases with different requirements to be taken into consideration. The constant lighting of a workstation works differently from lighting regulation in an entry foyer, where a global brightness impression is important. With suspended lights, the indirect proportion of light must additionally be taken into consideration, and in deep rooms the separate regulation of two light strips can be a practical option. If it should only be possible to turn the lighting on and off, equivalent functions should still be applicable. So it's good that e.control has constant light regulators that cover all these requirements.

Advantages

- Functional guarantee through complete software objects
- Transparency thanks to uniform objects on all devices
- Complete support for EN 15232 BAC efficiency class A – without programming
- Compatibility with VDI 3813
- Interoperability according to LonMark

Slat Tracking Control

Complex, priority-dependent sequences are characteristic for optimally used sunblinds. While e.control handles the slat tracking control for the sunblinds uniformly over the facade – of course parameterised in terms of frequency and minimum deflection angle – every sunshade actuator individually uses shadow corrections to check whether, for example, the neighbouring building is casting a shadow on its own window, permitting the slats to be turned up without any risk of glare. Then there are wind and weather, along with interventions by Facility Management or the users, who can use extensive priority controls to specify the correct sequence of events. e.control handles it all without breaking a sweat.

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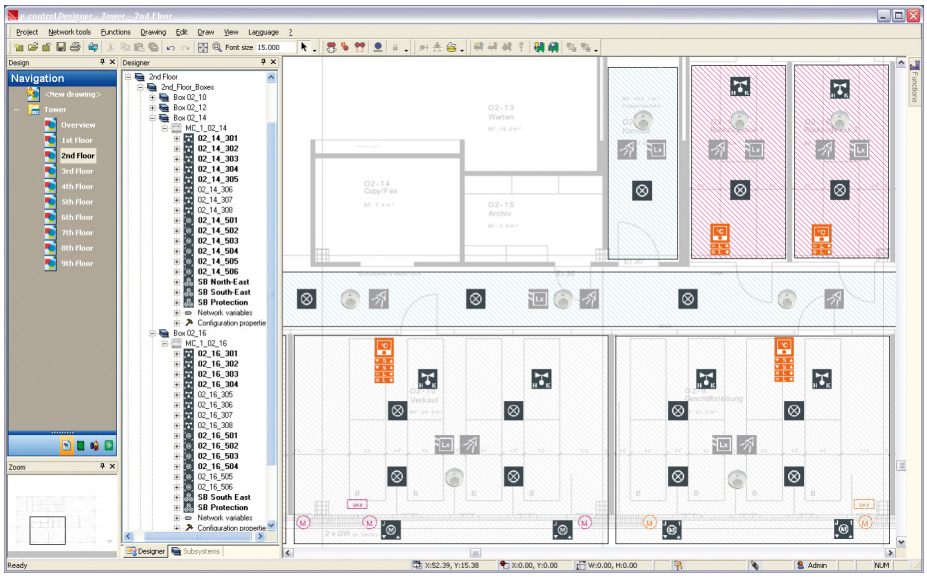
Create Flexibility - e.control Designer



e.control Designer makes changes in area usage child's play.

Its graphical and floor plan-oriented user interface makes it easy to create, modify or move rooms only by mouse click.

Simplier than Ever

The e.control Designer makes changes in area usage child's play. Its graphical user interface makes the generation, modification, and moving of floor plans easy. Corresponding changes to automation systems are handled automatically by the software afterwards. Since both the flexible adaptation of room layout as well as service to field devices takes place using the floor plan-oriented user interface, with e.control Designer, Facility Management has a powerful tool available.

Access to the Field Level

All communications devices at the field level, regardless of whether they use DALI, SMI, MP-Bus or EnOcean interfaces, are just a mouse click away from the user interface. They can be parameterised, tested or replaced directly from e.control Designer. Even faults like burnt-out lights can be identified on the user interface. Since the work steps are the same regardless of the protocol in use, access is transparent and uniform for the operator and does not require any special knowledge of the technologies.

Extensive Function Library

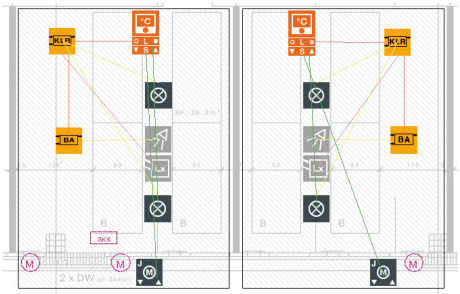
The e.control Designer has an extensive function library of all VDI 3813 room automation functions, supporting the creation of a function macro for any room type. Even the most demanding of buildings with top energy efficiency, such as the main administration complex at ThyssenKrupp with a four-digit number of rooms, can be graphically modelled and easily operated.

BACnet Entirely Automatically

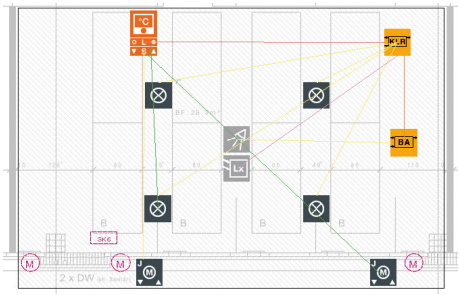
e.control Designer even takes data transfer at the management level into consideration. To do this, the tool manages all e.control floor controllers and automatically ensures the room-by-room grouping of all data points as BACnet objects. This permits adaptations to the management software to be avoided when rooms are changed, or at least reduced to the creation of new rooms and the deletion of obsolete rooms.

Advantages

- Extensive function library compliant with VDI 3813
- Room changes are carried out graphically on a building floor plan
- Graphical user interface permits access to all communication-capable field devices
- Device status and faults are displayed on the user interface
- Automatic room-by-room assignment of BACnet objects to floor controllers



The creation of one hatched area automatically defines a room over 2 segments



Modification of the hatched areas re-defines the room setup to two individual rooms

SafeSquare GmbH
Am Graben 2-6
42477 Radevormwald
Germany

+49 2191 56814 0
+49 2191 56814 89

sales@spega.com
www.spega.com

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