e.control™
Room automation systems

Reducing costs
Increasing flexibility
Enhancing comfort

Product catalogue 2008/2009

Lighting controls
Sunblind controls
Climate controls
Dear spega Partner,

Due to rising energy costs, improvements in the energy performance of buildings are increasingly moving into the spotlight. The Energy Performance of Buildings Directive of the European Union which has entered into force in all over Europe is now sending clear signals. Due to the mandatory introduction of an energy certificate, the energy requirements of all important technical equipment used for heating, cooling, ventilating and lighting commercial buildings are now, for the first time, transparent to the user. What does this mean?

By additionally taking electrical energy into account, especially for lighting, the primary energy requirements, for example of office buildings, is now approximately twice that of previous requirements. This means that all those measures previously discussed include only one half of the overall energy saving potential, as these measures are targeted only at heating energy requirements. It is, therefore, high time a solution was found which deals with all forms of energy at the same time, thus leading to considerably increased efficiency values: room automation!

Room automation means the integral automation of all technical equipment used for heating, ventilating, cooling, lighting and sun-screening rooms. It is thus much more than the individual room control we know from HVAC technology, as it also comprises electrotechnical systems such as lighting control and sunblind control. These are embedded in a coordinated, integrated system in which each measurement value is recorded just once and supplied to all control devices, and in which all operating and control functions are harmonised to provide optimal energy performance and a high level of comfort. Using a whole bundle of partial functions (see pp. 10 - 15), room automation automatically reduces heating, cooling or electrical power requirements as a function of the room utilisation and the free energy sources available, such as sunlight or cool night air, to a minimum. In this way energy and cost savings of up to 50% can be made! Making room automation the strongest weapon against high energy costs. What’s more, as the equipment can be easily retrofitted, it can be installed not just in new buildings but within existing building structures!

Years ago, we at spega set ourselves the goal of achieving energy efficiency and now with e.control we have developed a perfectly coordinated, integrated room automation system which fully utilises energy saving potential. Thanks to its modular structure, it also supports variable room divisions, from an individual office to an open-plan office, without having to alter the wiring. Adjustments using our e.control Room Design Suite graphic software are so easy that users can carry them out themselves. Regardless of how the organisation of work and processes change in future, e.control is ready for them!

With e.control you can now enter the world of room automation and make use of the spega service: as a building owner, investor or planner we or our distributors will offer you advice on possible means of increasing the efficiency of your building and show you which room automation functions you will need to do this. Planners can also rely on our extensive planning and tendering assistance methods. We look forward to working with you – do contact us!

Your spega team
Symbols:

- Power supply 230V AC (mains voltage)
- Power supply 24V DC
- Power supply 24V AC/DC
- LON transceiver FTT10
- LON transceiver TP/XF-1250
- Demo software available*
- Plugin available*
- Software application available*
- Technical data sheet available*

* on e.control CD or on the internet under www.spega.com
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## Planning with e.control™ - it’s child’s play!

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Intelligent buildings are what we do best. As one of the pioneers in room automation and one of the leading manufacturers of open LON automation solutions in Germany, we focus on realising efficient and comfortable buildings. By combining a full-fledged and flexible automation concept with a software functionality which goes well beyond your expectations, we are able to always produce optimum solutions regardless of the requirements.

Building automation is what really gets spega going. For approximately ten years, therefore, our developers have been focusing on LON technology. ALEX TE, our software for system integration, has become the standard in Germany. Driven by our know-how in building installation technology, the unique room automation solution e.control was developed. The modular, harmonised design shows that spega ideas always mature into the “somewhat better” products. The fact that the complete system is manufactured in Germany guarantees highest quality.

To allow complex building projects to be implemented competently, spega regards itself as a partner in a network. Thanks to the close ties with our distributors and system partners, i.e. system integrators or electrical installation companies with special know-how, we are available for all those involved in the project. Whether it is for the preparation of specific applications or design-related advice – spega is there for you.

In addition to distributors and system partners, spega also provides competent service to building owners and planners, who can rely on specialist advice when it comes to the themes of energy performance, comfort and flexibility of utilisation through room automation as well as the planning, design and commissioning of LON networks.

As an active partner of LonMark International and member of LonMark Germany spega is also involved in the distribution and further development of LON technology, which due to its capabilities is the number one choice for room automation solutions.

Through our involvement in standardization committees, spega uses its know-how to help to ensure that specialist planners and system integrators can rely on clear guidelines and standards when planning and designing room automation solutions.

Open technologies require open communication! At spega you can count on competent support with short reaction times and extensive information and documentation on all products and designs. Visit our website at http://www.spega.com or, even better, get in touch with us personally!
spega supports planners, architects and system integrators with future-oriented room automation solutions and technical know-how.

A small selection of our reference projects:

**Airbus Germany, Varel**
Works expansion
Scope of supply: entire lighting and sunblind control systems

**Eurohypo, Frankfurt**
Construction of new headquarters
Scope of supply: control panel, weather sensor technology, infrastructure

**Expomedia Light Cube, Saarbrücken**
Media façade with fractal lighting sequence control
Scope of supply: LON control system and actuators, 864 light rods with 300 LEDs each

**Grand Hotel Intercontinental, Düsseldorf**
Construction of a new hotel, office and leisure building
Scope of supply: entire lighting and sunblind actuator systems

**Fürth State Council Offices Fürth, Zirndorf**
Construction of a new administrative building
Scope of supply: complete room automation

**LVA rehabilitation clinic, Bad Eilsen**
Reconstruction of a clinic building
Scope of supply: entire lighting and sunblind control systems

**Max-Planck-Institute for molecular biomedicine, Münster**
Construction of a new institute with laboratory and office building
Scope of supply: complete room automation

**NEC Electronics Europe Headquarter, Düsseldorf**
Construction of the European headquarters
Scope of supply: complete flexible-axis room automation

**premino Business Center, Munich**
Construction of a new office building complex
Scope of supply: entire room climate control system

**ratiopharm Pharma Group Headquarter, Ulm**
Extension of the headquarters
Scope of supply: entire lighting and sunblind control systems

**State Exhibition Center, Stuttgart**
Construction of a new exhibition center with 9 halls and congress center
Scope of supply: complete lighting and blind controls

**Unfallkasse Hessen, Frankfurt**
Construction of the headquarters
Scope of supply: entire lighting and sunblind actuator systems

**Volkswagen AG, Wolfsburg**
Setting-up of a location-wide LON network for Facility Management
Scope of supply: entire infrastructure and signal inputs

**Westend Duo (Tower 24), Frankfurt**
Construction of a 2-part office block
Scope of supply: flexible-axis lighting and sunblind actuator systems

For further references, visit [http://www.spega.com/references](http://www.spega.com/references)
Why room automation?

The technical demands made particularly on commercial buildings are increasing all the time. The reasons for this are found in the ever-increasing energy costs, in the realisation that an ergonomic working environment is an essential contributory factor in the efficiency and productivity of the users, and finally in the continually changing working practices, which always require an adaptation in the way the surface area is divided. In summary, what is needed of a building or property is:

- more energy efficiency
- more productivity
- more flexibility

What all these demands have in common is that they can only be met "in situ", in places where the building and user are in direct contact, i.e. in the rooms. This is where room automation comes into play, breaking away from traditional ideas regarding the separation of systems which hitherto made achieving these goals difficult. Only an integrated system without gateways and communication barriers between the individual functions can solve the tasks in question in an economical manner. This is why room automation is the key to future-oriented buildings.

Energy performance

The European Directive on Energy Performance of Buildings and the related introduction of an energy certificate places the emphasis on the energy consumption of a building and the opportunities for reducing it. Since the certificate shows the standard of energy performance which a building has, it offers the user an insight into what auxiliary costs can be expected, and, for the owner, has an effect on the value or rentability of the property.

A better evaluation in terms of the energy certificate, it makes sense to adhere to European standards, as they make up the figures relating to the overall energy requirements of a building. Therefore, the energy figures for the respective rooms are looked at first, then a "reverse" calculation of the distribution and conversion of useful energy is made, right down to the primary source of energy. In this way, it is possible to see that the biggest savings can be made if one first avoids uncalled-for energy consumption in the rooms themselves. Only room automation is able to decide whether a light should still be left on after sunrise or whether a radiator should be turned off, because a window has been opened to air the room.

In this way, room automation is the most important tool in improving energy performance — with an amazing savings potential, too.*

- 40% of heating and cooling energy and
- 60% of lighting energy

can be saved by:

- optimum use of daylight by combining sun tracking and constant light control
- time program-controlled switching of mode change-over for heating or cooling
- blocking the energy supply when opening windows
- cooling through windows during the night
- occupancy sensors

Room automation, therefore, reduces primary energy consumption by up to 50 per cent, thus halving your energy costs.

The fact that efficiency-improving room automation is not just beneficial to the environment but is also a high-return investment...
Productivity

Employees constitute the potential of every company. Their willingness to perform is necessary for success. Room automation helps to control their day-to-day working environment in such a way that they feel happy with it.

In addition to energy efficiency, another purpose of room automation is to focus on the users and their well-being. A user personally decides, for example, how high the room temperature should be. Working in the background, the automation system ensures a glare-free and sufficiently lit environment – with as much natural sunlight as possible. To the relief of all concerned, users have full control themselves for the time they are in the room: they can override any function manually. Once the user leaves the room, the room automation can once again concentrate on the automatic functions for saving energy.

Inform your customers imposingly!

Order our brochure for investors and commercial building owners and thus inform your customers about the advantages of a modern room automation system such as e.control:

- on the internet under www.spega.com/brochure
- via fax reply form on page 77.

Flexibility

Changes in the corporate structure or a change of tenant often demand that buildings offer the possibility of free adaptation to changes in utilisation and a variable breakdown of rooms. The flexible-axis, decentralised and modular structure of the e.control room automation system supports the flexibility needed in an exemplary manner. It distinguishes between axis-oriented actuators and room-oriented operating and control functions. In this way, it is sufficient for implementing functional changes in terms of software using the easy-to-operate graphic e.control Designer Suite. Rewiring or the opening of false floors or suspended ceilings are no longer necessary.

The modern room automation system also gives the technical planner the opportunity to provide an installation concept which is suitable for the building. Components can thus be accommodated in numerous centralised sub-distribution systems as well as in decentralised distribution boxes, i.e. under the ceiling or in false floors. With its FastCon series spega offers plug-in devices specifically for this purpose.

A modular room automation system such as e.control can easily be expanded subsequently. Thus, a subsequent change to dim lighting, the retrofitting of a cooling ceiling or the installation of an additional control device can be carried out without any difficulty. e.control always ensures that your demands are met perfectly – whatever your future expectations of your building are.

* A detailed calculation on the savings potential and return of the e.control system can be obtained from spega.
e.control™ solutions for lighting control

For bright sparks!

e.control offers what is certainly the most extensive range of actuators for operating lights and electrical consumers. From conventional light bulbs to high or low-voltage halogen lights, fluorescent lights with switchable or dimmable electronic ballast (1-10V or DALI) - e.control always has the appropriate actuator, for both distribution board installation or as a plug-in from the FastCon series.

Unlimited flexibility!

As an intelligent LON system, e.control comprises sensors and actuators, which are only assigned to each other via software bindings. In this way, all functions can be adapted to suit each other during operation without changing the wiring. Regardless of whether you create group or individual offices from an open-plan office, rearrange areas of a museum or make any other purpose-related changes, the lighting control system will always go with it – without the need for any wire-laying or caulking work!

Doing it your way!

Lighting solutions with e.control can be operated in a way which suits you:

- via conventional installation switches using a lumina T6 pushbutton interface,
- via the integrated dialog 1 or dialog 8 room control device for all room functions,
- via the dialog T touch panel,
- via wireless dialog RCL switches in combination with LON radio receivers or
- via the lumina MS-FB IR remote control in conjunction with the MS3 multisensor.

Thanks to LON technology, operation via your PC’s browser is also no problem.

Particularly cost-effective!

Energy consumption for lighting is enormous: in office, administrative or school buildings it represents up to 50% of overall primary energy consumption. A system, equipped with all energy-saving functions such as e.control, drastically reduces this consumption level – by more than 50%.

Constant light control

Constant light control is the most efficient way of saving electrical energy! In rooms which are supplied with daylight, it adds only as much artificial light as is needed to maintain the required brightness level. This saves over 50% of the lighting energy! In the e.control system, the lumina MS3 multisensor (in a flush-type or ceiling version), with its built-in light and occupancy sensor and the integrated constant light controller combined with all dimmable e.control actuators, ensures that this huge energy saving is guaranteed. In large rooms with an uneven distribution of daylight, the lumina MS3 even controls two groups of lighting separately from each other, in order to ensure that the brightness level remains the same throughout the entire room.

Daylight switch

The multisensor can also be used in conjunction with switchable light actuators. In this case the installed controller only activates the artificial light when there is insufficient daylight. An automatic learn function ensures that the lighting is switched off again when there is sufficient daylight. This function can also be used with one or two separate light strips.

Touch panel

- dialog T (p. 43)

Room control panels

- dialog 1 (p. 44)
- dialog 8 (p. 45)

Wireless switch

- clima LCD (p. 45)
- clima RCM (pp. 45/46)
- clima LCD (p. 45)
- clima RCM (p. 46)

Standard switch

- Switch (p. 49)
- dialog RCL (p. 48)

Occupancy sensors

- lumina PM (p. 51)
- dialog RC-E (p. 49)
- lumina MS/RC (p. 49)
- luminat 6 T (p. 44)
- Switch (p. 49)
- lumina PM (p. 51)
- lumina PM (p. 51)

- Switching and dimming
- Scene control
- Time programs
- Switching and dimming
- Scene control
- Daylight switch (dep. on outdoor luminance)
- Switching and dimming
- Scene control
- Daylight switch
- Constant light control
- Switching and dimming
- Scene control
- Automatic light (e.g. in corridors)
Switching on a light only when there is someone in the room is one of the easiest ways of increasing energy performance. Reductions by up to 20% can thus be achieved. The adjustable time delay prevents a light from being switched off unintentionally, in cases where persons present in the room stop moving for a moment. To this end, e.control offers the lumina occupancy sensor, in flush-type or ceiling version, in addition to the afore-mentioned multisensors. Its signal contact can be connected to any e.control device with binary input.

**Twilight detector**

Whether indoors or outdoors, in circulation spaces or for illuminating a building at night, light is only required when it gets dark. Since the time at which the sun sets varies from day to day, a twilight detector independently ensures that light is activated at the best possible time. Using its light sensor and the integrated automatic twilight detector, the e.control ombra W2 compact weather sensor always switches the required light actuators on and off at the right moment. The threshold values and time delay can be parameterised.

**Scene control**

Wherever rooms are used for different purposes, for example conference rooms, different lighting moods can be called up by a simple push of a button using the e.control scene control system, regardless of whether this is done by pushbutton (in conjunction with lumina T6), via the dialog 1 or dialog T room control devices or via IR remote control. e.control actuators already have an integrated scene controller, with the result that no additional devices are required. Moreover, the sistema RC2 application controller allows the integration of up to 16 external actuators without their own scene controllers into the scene control system.

**Partition wall control**

Partition wall systems allow conference rooms to be used variably. This variability means that the lighting needs to be just as variable: operation – whether it be switching on/off, dimming or calling up scenes – should always relate to the non-separated part of the room only. The only thing required for this function is the sistema RC2 application controller, which, with its special partition wall software, provides even control for lighting, sunblinds as well as scene allocation. The open status of the partition wall can be detected by any e.control device with binary input via a limit switch. The application controllers can be combined when using several partition walls.

**e.control is much more...**

e.control is much more than just a lighting control system! As part of an integrated room automation system, the lighting functions naturally work hand-in-hand with the sunblind and room climate control functions. Harmonised operation using the room control devices, common use of the occupancy or multi-sensors and the perfect coordination of constant light and antidazzle functions (sunlight control or sun tracking) are proof of this.

### Multisensors
- lumina MS3 (p. 50)
- lumina MS3 (p. 50)

### Control devices for special applications
- ombra W2 (p. 72)
- sistema RC2 (p. 74)

### Actuators for dimming or switching electrical consumers
- R series: actuators for distribution boards (pp. 52 et sqq.)
- M series: modular actuators for system cabinets (pp. 64 et seq.)
- FastCon actuators (pp. 68 et sqq.)
- 230V Switching of lamps or electrical consumers
- Control of electronic ballasts with 1-10V interface
- Control of DALI devices
- Dimming of light bulbs, halogen lamps etc.
e.control™ solutions for sunblind control

We can get anything moving!

Whether it’s blinds, awnings, shades or windows, with spega actuators you can get anything moving. It doesn’t matter whether you use 24V DC motors, 230V blind drives or high-precision DMI-drives: e.control always has the appropriate actuator. All devices have extensive functionality, such as adaptability in the event of power recovery, prioritisation of manual drive commands and precise positioning of the blind following specification of the blind length and slat angle.

You give the orders!

Sunblind functions are initiated automatically in many ways, as the functions listed below show. In order to ensure, however, that the user never loses control, manual intervention is always possible. This can be achieved by the following means:

- conventional installation pushbuttons using the lumina T6 pushbutton interface,
- the dialog 1 or 8 integrated room control panels or the dialog 1 touch panel or
- the wireless dialog RCJ switches
- the lumina MS-FB IR remote control in conjunction with lumina MS3 multisensor.

Limitless flexibility!

As far as sunblinds go, e.control, as a decentralised LON system, stands out as being enormously flexible. Thus, all sunblind functions can be adapted during operation to suit varying room divisions or purposes, without having to change the wiring. Subsequent functional expansions can easily be achieved thanks to the modular design of the software.

Use the daylight!

Sunblind systems primarily serve the purpose of protecting users from excessively strong sunlight. Legal requirements governing this include, for example, the Directive on PC Workstations. However, you can expect even more from an intelligent control system such as e.control! The sunlight is not blocked out, it is used to ensure a glare-free supply of daylight. The following functions show in detail how this works. Particularly in conjunction with a constant light control (see pp. 10/11), the best possible energy efficiency levels with an optimum supply of daylight can thus be achieved.

Sunblind protection control

The e.control sunblind protection control functions take the wind right out of the weather’s sails! High-precision sensors for temperature, rain, wind speed and direction ensure that the ombra W8 sensor unit always keeps an overview of weather conditions. To ensure that the blinds are not damaged by wind or frost – or potentially, in the case of fabric awnings, by rain – the sensor unit moves them safely into the final position beforehand. The varying susceptibility to wind of various types of blind is, of course, taken into consideration here.

Sunlight control

The sunlight control system evaluates the outside brightness measured on each façade and determines from which threshold value and with which time delay the blinds are moved into a definable anti-dazzle position, in order to prevent sunlight having an adverse effect on the user. In the event of the subsequent formation of clouds which exceeds an adjustable time delay, the blinds are drawn in or turned to produce maximum visibility. This function is carried out for each façade using the ombra W2 compact sensor or throughout the entire building with the sistema RC2 application controller in combination with the ombra W8 sensor unit.
In addition to lighting, the sunblinds sunblind protection

**Sun tracking control**

The supply of rooms with daylight is something which is desirable from both a physiological point of view as well as for reasons of energy efficiency. For this reason, by comparison with the sunlight control system, there is further optimising potential to be found in only closing the blinds as far as necessary to avoid glare from direct sunlight coming in. Since the position of the sun differs at each time of the day and at different times of the year, cyclical adjustment of the slats to suit the path of the sun is required. The ombra BST sun tracking controller fulfils this task perfectly. It calculates the position of the sun and, depending on the geometry of the slat, facade alignment and intensity of the sun, the best position of the blinds for up to 15 façades of a building. The ombra BST sun tracking controller are suitable for this function.

**Calculation of shading factors**

The blind of a window only needs to be moved by both aforementioned automatic devices if it is not at that moment in the shadow of neighbouring buildings. In such cases, the e.control plug-in for calculating shading factors is used with the aid of geometric data from the surrounding building which is stored in each actuator. All e.control actuators in conjunction with the ombra BST sun tracking controller are suitable for this function.

**Time program**

The e.control time programs located in dialog T or in the gateways L-GATE or L-INX execute positioning commands for the sunblind system. What’s more, it is also possible to switch the sunlight control device or sun tracking controller, for instance, on or off, or to reactivate them at certain times for those blinds which were taken out of the device due to a local control operation. In this way, it is possible to ensure that all blinds are returned to the system, for example during lunchtime.

**Scene control**

In addition to lighting, the sunblinds can also be included in the e.control scene control system, e.g. for conference rooms. The blind length and slat angle are stored for each scene and can be recalled precisely via pushbuttons (wireless or lumina T6) or control devices (dialog 1, 8 or T). Since a scene controller is already integrated into e.control blind actuators, no other additional devices are required. Furthermore, a sistema RC2 application controller is also able to include up to 16 external actuators without their own scene controllers into the scene control system.

**Sunblind thermo control**

In addition to its effect on the lighting in a room, sunlight naturally has an influence on the energy required for heating or cooling the room, too. During the winter or spring the additional energy is welcome in order to save heating energy. In summer, on the other hand, it can have a counterproductive effect, due to the possibility of overheating. The thermo control system, located on every e.control room control device and the lumina T6 pushbutton interface, positions the blinds relative to the inside temperature and intensity of the sun. In this way, the way sunblinds support the room temperature control system. They are activated as soon as the user logs off or the occupancy sensors or multisensors no longer detect any persons in the room. As soon as someone enters the room again, the thermo control system is automatically switched off again and the antiglare functions take control (sunlight control or sun tracking control).

**Partition wall control**

In addition to lighting, the sunblinds can also be included in the partition wall control system of variably arranged rooms. This function is also handled by the sistema RC2 application controller.
e.control has it all under control!

The afore mentioned separation of controller and actuator has one further significant advantage, in addition to the free selection of the actuating signal: e.control room climate control systems are by definition ready for variable room uses!

The use of a time switch (e.g. dialog T, L-GATE or L-INX) ensures the operating modes for the holiday periods, the Building Protection mode, in order to save more energy. If a section of a building is not being used temporarily, it makes sense to select an energy-saving mode, which allows for a greater distribution of the temperature without the risk of a long heating-up phase when the room is occupied again. This operating mode is called standby. In the event of a room not being occupied for longer periods of time, e.g. night, the temperature distribution can be extended considerably using Economy mode, in order to save more energy. If a section of a building is not being used, e.g. during the holiday periods, the Building Protection mode prevents any damage to the building while using a minimum amount of energy.

In order for users to be able to select a room temperature which suits them, the controllers have setpoint adjustment, the range of which can be parameterised via the relevant software. Furthermore, the fan stages and room configuration can be selected manually.

Public buildings - no problem!

A particularly economical solution for commercial architecture, for example, in schools, is found in the clima RO compact controller. This robust flush-type device without control elements serves as a stand-alone controller. In addition to recording and controlling the room temperature, it has heating and cooling outputs for continuous actuators. Two binary inputs evaluate window contacts or occupancy sensors. It is, therefore, a high-quality controller which take up as much space as a light switch and can be perfectly integrated into the room automation system via its LON interface.

Energy efficiency in buildings can be increased considerably by adjusting the room temperature to suit the utilisation times. To this end, all e.control controllers have 4 operating modes, with the different setpoints for the heating and cooling sequence based on each respective mode. These can naturally be set via software programs. While in use, the room is in Comfort mode, i.e. the Comfort setpoint is used, adjusted by the required setpoints which can be individually selected by the user at the controller. If the room is not being used temporarily, it makes sense to select an energy-saving mode, which allows for a greater distribution of the temperature without the risk of a long heating-up phase when the room is occupied again. This operating mode is called standby. In the event of a room not being occupied for longer periods of time, e.g. night, the temperature distribution can be extended considerably using Economy mode, in order to save more energy. If a section of a building is not being used, e.g. during the holiday periods, the Building Protection mode prevents any damage to the building while using a minimum amount of energy.

The use of a time switch (e.g. dialog T, L-GATE or L-INX) ensures the operating modes for each room group and/or section of the building suit their intended use.
Occupancy sensors
An ideal compliment to the operating mode switching system is occupancy sensing using e.control occupancy sensors or multisensors. By using these, it is possible to completely do without time-controlled switching to the Comfort mode, since switching to this mode only takes place on a room-by-room basis and only if the room is actually occupied. For this reason, it is sufficient to switch all rooms during the planned time of use to the Standby mode via the time switch. Occupancy sensing is particularly useful for saving energy in buildings with varying working and occupancy times!

Window monitoring
In addition to transmission heat losses via the external walls – which can be minimised using the functions mentioned previously – the second means of increasing efficiency is reducing ventilation cooling and heat losses through open windows. Thus, in the event of a window being open, e.control stops the supply of energy to the radiators and coolers and switches to the Building Protection mode (“Anti-frost protection”). This prevents the phenomenon, known from thermostat valves, of “heating out of the window”. All that is needed for this is the connection of window contacts via binary inputs.

Free night cooling
During the summer months, rooms heat up during the day due to the high air temperature and heat radiation. The free night cooling function on e.control controllers opens the windows or shutters in every room during the night, as soon as the cooler outside air can be circulated through the room to reduce the room temperature. Once the “Comfort” temperature has been reached during the course of the night, the controller closes the windows again, in order to prevent any unwanted further cooling. Since the night cooling function is part of the standard scope of e.control controllers, all that is required for the system to work are automatic shutters or windows. e.control actuators or blind actuators are suitable for this purpose.

Anti-frost protection
In order to prevent frost or condensation damage to the HVAC systems, all e.control controllers already comprise the necessary monitoring routines. While in the Building Protection mode, the controllers automatically ensure a minimum temperature is maintained in order to prevent frost damage. The formation of condensation on cooling ceilings is reported to the controller via dewpoint sensors, connected to binary inputs of the e.control system; the controller then interrupts cooling.

Multi-sensors
- student MS3 (p. 50)
- lumbra W2 (p. 72)
- sistema RC2 (p. 74)

Control devices for special applications
- Actuation of continuous actuators with 0-10V signal
- Actuation of motor-driven actuators with 24/230V (3 point)
- Actuation of thermoelectric actuators with 24/230VAC (PWM)
- Switching of multi-staged consumers e.g. fans (2-, 3-, 4-staged)

Actuators for radiators, heating/cooling ceilings, fan coils etc.
- R series: actuators for distribution boards (pp. 58 et seq.)
- M series: modular actuators for system cabinets (pp. 66 et seq.)
- Radiator (p. 61)
- Actuation of staged consumers (IR)
- Outdooor temperature (for free night cooling and summer comp.)

In order to keep the difference between the high outside temperatures in summer and the air-conditioned rooms inside within comfortable limits, all e.control operation panels are capable of moving the cooling setpoints independently, depending on the outside temperature. As well as increasing the level of comfort, savings can also be made with regard to cooling energy costs.

Load optimisation
The use of communicative room climate controllers also assists primary system control in optimising the supply of energy. Each controller sends its current load to an evaluator within the sistema RC2 application controller, which in turn tells the upstream DDC control system whether and how the inlet temperature or conducted volume should be adjusted to suit the current heating and/or cooling requirements. This requirement-based control system can be used to replace more inefficient processes such as outside temperature control.
e.control™ solutions for integrated room automation

The flexible-axis office building

Nowadays, modern office buildings need to be able to be smoothly adapted to suit changing organisational forms or different occupants. Regardless of whether it’s open-plan, group or individual offices, the layout of the buildings allows them to be used for different purposes. Such flexibility is, of course, also required of room automation. What’s new in this is that there are no longer any fixed boundaries and that any of the mostly grid-shaped axis segments can be used to form an autonomous room. Current automation practices with explicit individual room segments have their limitations here, since the conversion of rooms results in extensive rewiring and retrofitting work.

e.control, however, has the perfect answer to the challenges posed by modern buildings! With the aid of decentralised distribution boxes, equipped with actuators from the modular M series, a fixed number of room axes can be automated without having to take the room configuration into consideration. All lights, sunblinds and actuators as well as the binary contacts for window and dewpoint monitoring devices are connected to the distribution boxes. In this way, e.control achieves its goal of controlling each axis independently and autonomously, without ever having to change the cable routing. The modularity and variety of the M series thus ensures that every imaginable configuration can be implemented economically.

After the room configuration has been fixed, each office requires at least one room control device, e.g. dialog 1, 8 or clima RCM. For optimum energy performance, the installation of a multisensor for each room is also necessary. The software controllers needed to implement all room functions (see pp. 10-15) are already located on these devices, such that no other controllers are required.

The chart below shows an example of an energy-optimised and flexible-axis office building. The e.control distribution boxes integrate the entire actuator technology for 4 axes, including the required power supply (see pp. 62ff.). The design tools on the e.control CD help with the configuration of the system cabinet (see p. 32). A room control panel (see pp. 44ff) and a multisensor (see p. 50) has also been chosen for each room. These devices obtain their operating voltage via the power supply integrated into the system cabinet.

With such a transparent layout, all energy efficiency functions can work in harmony with each other, right across all systems:

- Utilising daylight by means of the sun tracking controller combined with a constant light controller
- Occupancy sensors for reducing the set-point temperature, switching off the lighting and activating the sunblind thermo control once the room has been vacated
- Standard manual operation of the light, sunblind and room temperature control systems
- Time control, e.g. for switching operating modes of the room temperature control system, for reactivating the sunblinds or for configuring night lighting
- Easy integration into building management systems via LON, OPC or BACnet.
The energy-efficient school

Rising energy costs are increasingly becoming a burden for public-sector budgets. In addition to administrative buildings, the requirements of which are similar to those of office buildings (see previous page), school and university buildings are a significant factor in this, in particular. Intelligent room automation solutions also help here to sustainably increase energy efficiency and are therefore, from an economic point of view, the first choice both for new buildings and for redevelopment measures. Since the flexible use of school buildings is normally not possible, an integrated room automation system can be freely configured according to the existing installation conditions. The illustration below shows an example of an e.control solution for school buildings in the form of a diagram.

Room temperature control is based on a room-by-room design and is performed by the room temperature controller clima RO-CC to which the clima A24 actuator and the local window contacts are connected. To ensure uniform and robust operation, the combination frame installed near the door also accommodates the pushbuttons for manual light and sunblind control. The binary input module lumina T6 which is required for the evaluation is located behind the pushbuttons.

The lighting control is set up according to the corridors and based, in the example, on dimmable DALI ballasts, which can be activated per room in two groups each by means of a DALI controller lumina RDAL 16, which is installed in the floor distribution system. The multisensor installed in the classrooms is thus in a position to dim the two light strips separately depending on the sunlight in order to be able to provide the brightness required for the entire room. The integrated occupancy sensor is naturally also used for switching over between control modes and for switching off the lighting after leaving the room.

Wherever necessary, the e.control system can be complemented by sunblind actuators. In the example, we have chosen the decentralised actuators of the FastCon series which due to their smaller dimensions are also suitable for narrow installation locations.

The special advantage of e.control room automation solutions is that on the one hand, installation-compatible and economical solutions can always be found for varying installation conditions thanks to the number of LON modules and, on the other hand, the functions always remain the same because of the modular software concept. For the owner this means that despite changing installation conditions his property always remains the same functionally and can thus be operated and optimised with minimal training. It is not surprising that all energy-saving and operation-optimising functions are also used in the example:

- Reduction of lighting energy through constant light control, combined with a sunlight control system or sun tracking control on the facades facing the sun
- Occupancy sensors to lower the target temperature, to switch off the lighting and to activating the sunblind thermo control after leaving the room
- Robust and uniform local operation of lighting, sunblinds with integrated temperature measurement
- Time programs, e.g. for switching over between the operating modes of the room temperature control system according to a time schedule
- Complete and uniform access by the centralised building management system to all data points and parameters in all properties via LON, OPC or BACnet.
e.control™ LON infrastructure and network topology

LON network structure

LON networks can be of almost any size. For segmentation purposes, routers or repeaters are used. With the complete range of Loytec infrastructure components, spega offers you the most efficient and user-friendly equipment which exists for LON networks. Whether as 2, 3 or 5-port switch series, you will find the right type for every topology. The devices can be supplied for just TP/FT networks and also for networks with a fast TP/XF-Backbone. As a result of the unique Plug & Play feature, the routers independently learn the network structure. Hence router administration is not required in the software. Alternatively, all L-Switches can, however, also be used in the conventional way as configured routers. A built-in diagnosis function teaches you by means of LEDs or diagnosis tool LSD (see p. 37) about the condition of the network segments. This way, you always have full control over your LON network!

LON over IP

With the possibility of sending LON telegrams via TCP/IP networks, LON networks have attained fully new dimensions. Backbones can thus be as large as possible and go even beyond firewalls and LAN boundaries, for instance, to link several buildings and estates with one another also across great distances. This “LON over IP” channels are connected via routers of the L-IP series (see p. 41) with the TP/FT-10 - or TP/XF1250 segments. The L-IP family can be remotely administered fully via the browser and also contains an EIA852 configuration server. The built-in diagnosis function can be accessed by means of the LSD tool as in the L-Switch series.

Technical data

The table on the right shows the most important parameters for the physical design of LON networks. The distance between the devices is the farthest connection between two nodes of the same segment; the network expansion in comparison comprises the length of all routes of a segment.
e.control™ interfaces to other systems

**e.control and building management**

The e.control room automation normally represents a greatly diversified network which includes all storeys and sections of buildings. A correspondingly large number of data is available and can be displayed on the operator panels of the building management system. Whether it is the condition of every lamp, the temperature of all rooms or the position of the windows, all data points can be easily transferred to the building management server. Since the e.control OPC server directly accesses the LNS database, the LON data points do not have to be updated manually. Through automatic reading of the entire database, all data points are available immediately to the management system’s OPC client. To ensure delay-free response and small bandwidth load even in large networks the OPC server instructs the LNS database to link all the necessary network variables automatically to the LON network interface so that the transfer of data from the LON network is event-driven.

Additionally e.control provides BACnet or OPC compliant time schedule, calendar, alarm processing and trend logging objects by utilising L-GATE or L-INX gateways. These objects can be managed directly from the management system.

**e.control and DDC systems**

A direct interface between the e.control room automation and DDC technology required for the control of primary units is worth considering, mainly to save energy. Although room automation can help save a large portion of the energy autonomously, further potential can be developed by means of a demand-oriented control system for HVAC facilities. In this case, after all the necessary optimization has been carried out, room automation sends the remaining requirements to the DDC system, which in turn optimizes the operating mode of the controlled units with these values.

The communication between the DDC system and e.control does not pose any obstacles as all leading manufacturers directly support the LON protocol. The connection to DDC systems is thus possible without additional gateways which favourably influences the efficiency, robustness and maintenance of the interface. In case a DDC system does not incorporate LON natively, the utilisation of L-GATE is recommended to translate LON telegrams into BACnet and vice versa.

**e.control and other field systems**

With OPC technology being so widespread, it is possible to combine all technical systems of a building into a uniform system via the building control system. In some cases, however, it is also possible to set up a direct connection on the field level. An example would be the automatic switching-on of lamps when a door is activated through the access control system. Here it makes sense to use systems which are either LON-based or which at least offer one LON interface. Most manufacturers have recognized this trend such that almost all systems can communicate on the field level via LON.

By using various logic domains, the systems can in fact share the same infrastructure without any negative influencing factors. The systems are logically connected by L-Proxy (s. p. 42).

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* Subsystems of an integrated building automation system according to DIN 276 (11-2006)
### e.control™ room control panels - overview

The e.control room control panels can be combined with all type 55 switching programs. In this way, their operation can be perfectly integrated into the interior design. The overview shows examples of combinations in various designs – even featuring pushbuttons for lights and blinds.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Design</th>
<th>Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard design lines with colour-coordinated plastic frames.</td>
<td>Finish aluminium</td>
<td>Top design lines with tinted glass frames in different shades of colours.</td>
</tr>
<tr>
<td>Berker S1, B1</td>
<td>Model: aluminium</td>
<td>Berker B7 Glas</td>
</tr>
<tr>
<td>Gira Standard 55, E2</td>
<td>Model: anthracite</td>
<td>Gira Esprit Glas</td>
</tr>
<tr>
<td>Jung AS 500, A 500</td>
<td>Frame: stainless steel</td>
<td>Jung A creation Glas</td>
</tr>
<tr>
<td>Merten M-Smart, M-Plan</td>
<td>Model: anthracite</td>
<td>Merten M-Plan Echtglas</td>
</tr>
<tr>
<td></td>
<td>Model: pure white</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frame: Gira E2 pure white</td>
<td></td>
</tr>
</tbody>
</table>

#### e.control highlights

- **Room control panels**
- **e.control™ room control panels - overview**

#### e.control™ room control panels

- **dialog 1**
- **dialog 8**
- **clima LCD**

<table>
<thead>
<tr>
<th>Model: aluminium</th>
<th>Model: pure white</th>
<th>Model: aluminium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame: Gira E2 pure white</td>
<td>Frame: Gira Esprit glass black</td>
<td>Frame: Gira Esprit steel</td>
</tr>
</tbody>
</table>

- **clima LCD**

- **Standard**
  - Standard design lines with colour-coordinated plastic frames.
  - Berker S1, B1
  - Gira Standard 55, E2
  - Jung AS 500, A 500
  - Merten M-Smart, M-Plan

- **Design**
  - Elegant design lines with frames made of aluminium, polished stainless steel or chrome.
  - Berker B3
  - Gira Event, Esprit, Profil 55
  - Jung A plus, A creation
  - Merten M-Arc, M-Star

- **Premium**
  - Top design lines with tinted glass frames in different shades of colours.
  - Berker B7 Glas
  - Gira Esprit Glas
  - Jung A creation Glas
  - Merten M-Plan Echtglas
<table>
<thead>
<tr>
<th>e.control highlights</th>
<th>room control panels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>clima RCM</strong></td>
<td><strong>clima RO</strong></td>
</tr>
<tr>
<td>Model: aluminium</td>
<td>Model: pure white</td>
</tr>
<tr>
<td>Frame: Jung A 500 aluminium</td>
<td>Frame: Berker B1 pure white</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>clima RO</strong></td>
<td><strong>dialog RC-TS</strong></td>
</tr>
<tr>
<td>Model: pure white</td>
<td>Model: aluminium</td>
</tr>
<tr>
<td>Frame: Gira Event aluminium</td>
<td>Frame: Merten M-Arc aluminium</td>
</tr>
<tr>
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<tr>
<td><strong>clima RO</strong></td>
<td><strong>dialog RC-TS</strong></td>
</tr>
<tr>
<td>Model: pure white</td>
<td>Model: aluminium</td>
</tr>
<tr>
<td>Frame: Jung A creation glass grey-blue</td>
<td>Frame: Berker B7 Glas alu.</td>
</tr>
</tbody>
</table>
**dialog 1 - state-of-the-art room control!**

Room automation unifies previously separated systems such as lighting and sunblind controls, as well as HVAC. To ensure that all the synergies are completely utilised, these systems communicate via the high-performance LON bus system.

Where users once found thermostats, light switches and sunblind controls of various designs and different operating sequences, today there is one integrated room control panel which allows straightforward interaction between the user and the automation system.

The room control panel dialog 1 meets these requirements in an optimum manner. Thanks to its timeless design, a particularly high-quality finish of anodised aluminium and the wall-hugging installation, the device fits perfectly into the architecture of a modern building. The intuitive operation via a turn/press button with a menu makes it easy to handle the room automation system.

The room control panel has a white illuminated LC display, a real time clock, 3 coloured LEDs and a buzzer. Additionally, a temperature sensor is integrated for measuring the room temperature. Not only are application programs available for the device without a room temperature controller for communication with separate LON individual room controllers from other manufacturers, but so are programs with controllers for radiators, chilled ceilings and fan coils or with a variable air volume controller. The applications with controllers are particularly suitable for use with the e.control HVAC actuators in flexible room automation solutions.

All applications have an intuitive log-on and log-off function, which is operated by pressing the button. In both cases, it is possible to save the status, which the room automation components should adopt, in the form of scenarios. For example, when entering the room, you only have to press the button to switch the temperature controller to Comfort mode, to activate the constant light controller and to switch the sunblinds to antiglare mode. When you leave the room, the controller will once again be switched to Standby mode, the lighting switched off and the sunblinds used by means of the sunblind thermo controller.

Furthermore, 10 favourites can be saved on the display which enable direct operation of all essential functions without having to select the corresponding menu.

The device offers menus for setting the setpoint temperature, operating mode (Comfort, Standby and Economy), function (off, auto, heat, cool) and fan stages with a timer program for the operating mode. Furthermore, lamps can be switched on, off or dimmed, sunblinds, ventilation flaps or windows positioned and scenes called up or saved.

In order to ensure that the user sees only what he requires, the menu can be individually adapted by plug-ins and the texts modified. Every menu entry can moreover be password-protected or completely hidden. Lighting duration, contrast and the display of time, date and temperature can also be selected. Since the control panel dispenses with imprinted or engraved symbols, it is ideally suited for modifications or extensions as only the menu has to be adjusted in these cases via the plug-in.
dialog 8 - all functions combined!

spega’s dialog 8 is completely at home in representative rooms with high levels of functionality. The high quality optics in three shades of colours – pure white, anthracite and aluminium – which can also be combined with a stainless steel or glass frame – further highlights the character of the room.

The control panel features a white screen for displaying the room and desired temperature, the time and date as well as various control statuses. An integrated temperature sensor also records the room temperature. The panel has 8 pushbuttons, which can be freely configured, for setpoint changing, occupancy sensing, fan stage adjustment as well as for operating lighting circuits, blinds or windows and for managing scenes. All pushbuttons have LEDs which serve as a status display.

For rooms with more extensive equipment, a version featuring 4 additional pushbuttons is also available. These can also be freely configured, but are particularly suitable for setting the fan stages, adjusting the setpoints or as an occupancy switch. All control switches can be used individually or in pairs for a particular function, which can be quickly read off on the large backlit display screen. The LEDs can – depending on the pushbutton function – display various statuses.

As is usual for spega control systems, applications with or without integrated room temperature controller are also available for dialog 8. In this way, the system can also be equally used in flexible e.control room automation systems, as well as in combination with external controllers. Applications with the controller can be selected to support static heating and cooling systems, such as radiators or heated/cooled ceilings or fan coils. Of course, the controllers also offer the wide range of functionalities known of spega, including free night cooling or summer compensation. The sunblind thermo control integrated into all applications takes control of the sunblinds when leaving the room, thus ensuring that the heating or cooling of the room (if sunlight penetrates the room) is supported.

Assembly of the control panel is extremely easy, since the base with LON connection which is standard for all systems is fitted in a conventional hollow-wall box or flush-type box. The panel can be then be placed – in the desired colour and with the selected number of pushbuttons – to this base element.
clima LCD, RCM, RO - switches are becoming intelligent!

The selection of control elements is determined by functional and design requirements. For this reason, the switch manufacturers such as Berker, Gira, Jung or Merten offer numerous design variations of pushbuttons, sockets and other installation devices. The aim of the clima LCD, clima RCM, clima RO and lumina T6 e.control systems is to make these standard switching programs usable for room automation and thus ensure a standard appearance for the control elements, data technology and sockets.

The clima LCD, clima RCM and clima RO room controllers have a temperature sensor for measuring the room temperature and an application for controlling all conventional heating and cooling systems such as radiators, cooled ceilings or fan coils with a 2 or 4-pipe system. The software has the controller functions Off, Auto, Heating, Cooling, Pre-cooling and Free Night Cooling as well as the ability to switch between the Comfort, Standby and Economy operating modes. The controllers send the output signals direct via LON to corresponding actuators, e.g. to the M or R-series e.control actuators. Alternatively, there are also versions available comprising integrated actuators for static or fan-assisted systems. All three controllers are designed to operate in combination with the type 55 design from the above-mentioned manufacturers and are available in the three colours – pure white, anthracite and aluminium.

Whilst clima RO has no control functions due to it being used primarily in public areas, e.g. classrooms or halls, clima RCM offers a setting adjustment dial as well as the option of an occupancy pushbutton and a button for setting the fan speed, including the corresponding LEDs. Both systems have 4 additional binary inputs which can accommodate standard pushbuttons to operate the lighting and sunblinds.

An LC display on the clima LCD shows the user all the necessary data and statuses such as room temperature, setpoint, fan stage, time as well as various controller statuses. These are adjusted by means of 4 pushbuttons whose functions can be freely assigned, clima LCD can also be combined with up to 4 pushbuttons for operating the lighting and sunblinds.

The lumina T6 pushbutton interface allows conventional light and sunblind pushbuttons for room automation purposes to be used. Up to 6 pushbuttons can be operated on one interface. With this application, the functions for switching the light on or dimming it, operating or turning the sunblind as well as retrieving or saving scenes can be freely assigned. Furthermore, lumina T6 has 2 transistor outputs for operating the check-back or orientation lights in the pushbuttons. The geometry of the pushbutton interface is designed such that the latter can be fitted in any flush-type or hollow-wall box behind any pushbutton, two or multi-button station.

As is standard with spega, all systems have productive plug-ins, which, in addition to easy setting, also allow the copying of parameters to other systems as well as the visualisation of network variables to assist during set-up (see picture).
Modern office environments are becoming increasingly dependent on the flexible adaptability of the room divisions. This means that wall elements are no longer fixed but can be adapted to suit the work organisation. This variability in interior design is now perfectly supported by battery-free control elements in the e.control room automation systems.

Room temperature sensors with or without setpoint adjustment and pushbuttons for operating the lighting, sunblinds or windows can be easily fitted on any smooth surface – using either adhesive or screws. An assembly box is not necessary. By using innovative EnOcean technology, the radio-controlled sensors require neither batteries nor an external power supply. The power gained by means of a solar cell from ambient light or at the push of a button is sufficient for sending the messages. This saves resources and minimises maintenance compared to conventional radio-controlled solutions – an important aspect in large buildings!

The varied design in the three colours of pure white, anthracite and aluminium is, due to its type 55 dimension, ideal for combining with the current switch designs from Berker, Gira, Jung or Merten. Depending on the functional scope, both single and multiple frames can be used (see examples on page 20/21).

spega offers 2 variants for receiving the radio telegrams and converting them into LON telegrams. The dialog RC-E wall-mounted receiver can read up to 16 sensors, with the respective telegrams being distributed to the integrated LonMark objects. The system is therefore ideally suited to connecting the sensors located in the entrance area to a LON network, e.g. push-buttons for corridors or retrofitting windows with radio contacts.

A whole new type of integrating radio control systems into flexible room automation solutions is found in the lumina MS/RC multisensor. Fitted in the room, it does not just receive the telegrams from the radio control systems fitted in this room, but also records the occupancy and brightness. Thus, all necessary control and sensor data are available, allowing the multisensory to take control of all room automation functions, such as control of the room temperature with the aid of radiators, heated/cooled ceilings or fan coils, supported by the sunblinds (sunblind thermo control) and the constant light control of the lighting. In combination with the M-series system cabinets, the multisensor with radio receiver forms a complete flexible-axis system, with no need even for control system cables.

Perfect for large areas: up to 16 wireless sensors are processed by one dialog RC-E

Perfect for axis-flexible offices: multisensor lumina MS/RC handles the room’s sensors directly
lumina MS3 - multisensors for optimum energy performance!

The main energy saving potential in a building lies in the targeted control of all room functions. E.control multisensors are the prerequisite for this. They record the necessary sensor data with the presence of the persons in the room and the room brightness. Ideal areas of application are rooms with changing occupancy, such as offices, meeting and conference rooms, classrooms and recreation rooms.

The occupancy sensor is based on the reliable passive infrared technology and is designed with its finely divided Fresnel lenses to recognise even the smallest movements. Furthermore, an additional evaluation logic makes it possible to use the sensors to monitor burglary.

Through a built-in brightness sensor with a measuring range of up to 1000 Lux, the multisensor at the same time supplies the decisive measuring variable for optimum use of daylight. By means of the integrated constant light controller, the multisensor is in a position to dim one or two strip lights in an infinitely adjustable manner so that the required illuminance level is attained with minimum use of energy. In addition, the constant light controller has another operating mode to switch on or switch off non-dimmable lighting in one or two strip lights which are used in cases where dimmable lighting is not required.

The multisensors receive the signals of the optional remote control to control lamps or blinds, to call up scenes or to set the fan stage of a fan convectors being operated in the room.

Thanks to this unique full-fledged equipment with occupancy, brightness and IR sensors as well as the necessary controllers for room occupancy (Lonmark profile "Occupancy Controller") and illuminance level (Lonmark profile "Constant Light Controller"), the combination of a multisensor with any e.control switching, dimming or control actuators is sufficient to set up an energy-efficient lighting system. Further special devices are not required.

The e.control multisensors are available as ceiling-mounted and surface-type versions. Both sensors are technically identical and stand out because of their compact form. In larger rooms the multisensors for expanding the detection range can also be combined with the e.control occupancy sensors lumina PM-x. Their status is evaluated by a binary input module. By using identical housings, a uniform image is guaranteed.
spega offers you the most extensive range of LON actuators for all kinds of installations. The e.control R series covers the classic distribution-box installation on DIN rails and includes digital and analogue inputs and outputs for all room automation functions.

Suitable light actuators are available for all types of lighting, and are switched on by means of a high-current relay, a 1-10V interface, a DALI ballast or by a universal dimmer. And that with 4, 8, 12 or in fact 16 channels. Since dimmable lighting facilities are becoming increasingly important due to their efficiency in terms of energy, a wide range is particularly important here. e.control uses in particular universal dimmers for bulbs, low-voltage or high-voltage halogen lamps with 2 or 4 output channels and power up to 1140 Watts per channel, control elements with 1-10V output signal for electronic ballasts with 4 or 8 channels, as well as DALI controllers for up to 64 DALI ballasts in a maximum of 16 groups.

By assigning addresses for the devices, the new DALI controller enables the operation of up to 64 DALI devices on a common data line. The devices are divided into a maximum of 8 or 16 groups and can thus be separately activated via the LON bus. Since communication between the DALI devices and the controller is bidirectional, status feedback can also be issued. If the ballasts are suitable, it is also possible, for example, to report the failure of a lamp to the building control system. Furthermore, the controllers also support a scene management system. For configuring DALI devices and group allocation, spega offers a comfortable LNS plug-in. For the first time, it is now possible to perform all parameterising work on the DALI devices during initial commissioning or during operation for maintenance purposes (e.g. when replacing electronic ballasts or when expanding to include new ballasts) using a notebook or PDA, too, via the built-in serial interface. In this manner, all work on the DALI system can be performed independently of the access to the LON network.

For the sunblind technology, the R series also offers an extensive actuator range. Actuators are available which can be connected to 230V sunblind drives as well as to 24V DC motors. Furthermore, digital DMI sunblinds can also be operated and are recommended due to their high precision, especially in daylight control systems. The actuators are available with 4, 8 or 12 outputs each. The application software enables exact positioning of the sunblind in any intermediate position and at any slat angle. In combination with the sun tracking controller ombra BST, all actuators are suitable for sun tracking control and calculation of shading factors. Moreover, they have control over the priority management of movement commands for weather protection, central commands of a building management system, manual commands and positioning commands of the automation systems.

The extensive damper actuator range of the R series is worth considering for HVAC technology. Actuators for all kinds of dampers are available with 4 to 16 channels. Every output has functions for the limitation of the manipulated variable, calibration or valve maintenance against jamming.

The R series is rounded off by binary and analogue inputs with 4 to 16 channels. As is customary at spega, each channel is configured by an easy-to-use plug-in. With every plug-in it is possible to transfer parameters from one channel to a selection of further channels of the same kind by just a click of the mouse. This ensures speed and safety during commissioning.
Decentralised, flexible-axis room automation solutions as shown on page 16 require variable adaptation of the hardware to suit the automation requirements. Only the variable equipping of input and output channels guarantees economical combination of devices for every application.

The M series of spega meets these requirements to perfection. Thanks to the modular design and the large variety of actuators for lighting, sunblinds and room climate control, the M series always offers you the right combination. An actuator combination always consists of one sistema MC16 universal controller and one or more actuator modules with up to 16 channels. The actuators are connected to one another and to the controller via a built-in plug-in connection. The type and number of actuator channels can thus be freely adapted without increasing the number of LON nodes. This saves time and offers greater transparency.

Directly downstream of the sistema MC16 universal controller are switching and control outputs as well as a DALI controller for lighting applications, such as actuators for AC, DC or DMI motors in sunblinds. Within the M series, the room climate control system can access actuators with Triac outputs for thermoelectric or motor drives as well as analogue outputs for continuous damper actuators. Furthermore, multi-stage relay actuators are suitable for actuating the fan stages.

The universal controller accommodates a maximum of 16 channels. This means that per controller, a maximum of 16 lighting circuits can be switched on or dimmed, 16 sunblinds positioned independently of one another or 16 actuators - regardless with which actuating signal - actuated. Any random combination is also obviously possible.

For each hardware channel, sistema MC16 provides, in terms of software, a dedicated Lonmark object with numerous parameters. The light outputs therefore contain, for example, switch-on and switch-off delays and a stairway lighting function with switch-off prewarning. The sunblind outputs can be adapted through numerous parameters to every sunblind system, such as blinds, awnings or shades and also possess a priority control which in addition to weather protection also evaluates central commands, commands from the automation functions (sunlight control systems and sun tracking) and manual movement commands. Depending on the design, the damper actuator channels have a self-calibration, a pulse-duration modulation and a valve maintenance function.

Each channel has a productive plug-in which is suitable for comfortable setting of all parameters and for copying the parameters onto other channels, on the same as on other devices. Furthermore, the plug-ins considerably accelerate the data point test during commissioning through direct actuation of the output channels.

With these properties, the e.control M series is the only LON product series which combines the endless variability of a modular automation system with the advantages of standardised Lonmark objects, thus providing extensive functionality and, at the same time, particularly quick and easy configuration.
e.control™ FastCon series - nothing could be faster and more effective!

Modern installation systems are increasingly based on intelligent plug-in connectors. The use of prefabricated wiring saves considerable time and significantly reduces costs: operations like cutting to length, stripping and connecting to terminals are no longer required, while wiring and connecting errors are a thing of the past.

spega’s FastCon (“Fast Connection”) series impressively combines the advantages of installation with the advantages of a modular and decentralised automation system. Like the bus cable, the supply and output cables are connected to the device directly via the gesis plug-in connector system from Wieland Electric.

All the devices of the FastCon series impress by their extremely compact dimensions and variable installation straps which facilitate installation directly on site in false floors, suspended ceilings or cable routes. This results in the shorter cable routes and fewer fire loads. Compared with distribution boxes with conventional devices and wired snap-in bushes, the FastCon series is particularly appealing because of lower costs, considerably less space requirements and the fact there is no longer a need for internal wiring and the related potential for faults.

FastCon actuators cover all standard controls for lighting and sunblind technology. Switching and dimmer actuators are just as available as sunblind actuators for AC drives. You also get combined actuators for lighting and sunblinds. All actuators can be supplied with a single-phase as well as a three-phase connection. The phase distribution of the outputs for a multiple-phase supply can be done in pairs and is chosen by the system integrator when placing the order. The requisite operating and service devices, such as the service pin or miniature fuse for securing small-diameter motor connecting lines, are easily accessible from the outside.

Since the software applications are similar to those of the R series (for series installation) and support the same productive plug-ins, the FastCon series easily fits into the progressive e.control concept for the system integrator, too.

FastCon: Nothing could be faster and more effective!
ombra BST - on the sunny side with sun tracking control!

The e.control sun tracking system perfectly combines the contradictory demands for glare-free work and the use of daylight. The ombra BST sun tracking controller is the core piece which has been developed in cooperation with the Gelsenkirchen* Polytechnic. It knows the exact position of the sun every single day of the year and at all times and is thus in a position to adapt the blinds of a building ideally to suit the position of the sun. In this way maximum daylight is ensured without the sun’s rays being able to enter the room directly. The additional brightness that may be required can be obtained through an e.control constant light control by adding artificial light. The advantages of sun tracking are obvious:

- maximum use of daylight
- reduced room heating
- reliable glare protection

Since all e.control blind actuators are suitable for sun tracking, it is sufficient to equip the building with the ombra BST sun tracking control system. Based on the outside brightness, which is provided by the ombra WB sensor unit, this device decides whether antiglare protection is required on a façade or whether the blinds remain in a definable waiting position – and that for a maximum of 15 independent façades and/or blind types. ombra BST thus also works for highly exacting building geometries, such as oblong or round layouts.

For buildings surrounded by other buildings, there is also the possibility of calculating shading factors. This makes sure that only those slats which are actually in the sun are moved into position. Blinds which are in the shadow of surrounding buildings move the slats to a fully horizontal position to enable an unobstructed view and maximum daylight provision. To implement this, the e.control plug-in for calculating shading factors is required which in turn needs the geometric data of the shadow-producing buildings and the dimensions and position of its own windows. On this basis, it creates shading-relevant geometric data for each window or group of windows and stores the data in the actuators. Since all e.control actuators can process the data, no additional hardware is required.

ombra BST knows the exact position of the sun at all time and every day.

Flat slat angles at noon ensure unobstructed view without the sun’s rays directly entering the room.

The low sun position in the morning and evening requires steeper slat angles. ombra BST nevertheless enables an unobstructed view.

Surrounding shadow-producing buildings are dealt with by the calculation of shading factors, i.e. shaded slats are temporarily moved up to ensure maximum daylight provision.

This is something which only e.control offers: Sun tracking and calculation of shading factors can be configured step-by-step by the system integrator with easy-to-use plug-ins.

* Laboratory for Building Automation at the University of Applied Sciences Gelsenkirchen

Graphics by: ventus GmbH - www.ventus-consult.de
ALEX TE Designer Suite - a revolution in system integration!

With the ALEX TE Designer Suite, spega has started a revolution in room automation! The suite consists of ALEX TE, e.control Designer and e.control Manager. While e.control Designer allows the system integrator to implement the entire configuration of an e.control room automation system graphically, e.control Manager helps the user to subsequently adapt the system in case of changes in utilisation or maintenance work.

The configuration for the system integrator is completely new thanks to e.control Designer. All work stages are carried out graphically, so special LON know-how is not required. The software focuses on LNS and also works ideally together with spega’s advanced system integration tool ALEX TE.

In the first stage, e.control Designer assists the system integrator in building up the LON network with the relevant routers and repeaters using a graphic tool. Then a basic layout plan is created for every part of the building and every storey in which all e.control devices are positioned according to their place of installation. The devices are shown by means of photo-realistic pictures. Following this, the input and output channels used from the devices can be placed at their position on the layout where they operate. Insertable coloured strips which can be faded in show the allocation to the relevant device (see large illustration). With this step, the hardware setup of the entire room automation system is completed. The graphic representation makes it easy for the system integrator to recognise the installation locations of the devices and the wiring structure. These can be checked with the aid of e.control plug-ins which are started by double-clicking the relevant channel.

In the second stage, the system integrator concentrates on implementing the requisite room automation functions. For this it is only necessary to put together the required combination for every room type from e.control Designer’s functional library and to mark those channels on the layout which are to be involved in the functions (see illustration in the centre). Room Designer automatically carries out all the necessary connections (“bindings”) and parameterisations on the basis of the rules stored in the functional library. This library contains all the functions from the areas of lighting control, sunblind and room climate control (see pp. 10 to 15) and supports all the existing spega e.control devices.

As already mentioned earlier, subsequent conversions with a new distribution of areas are also supported by e.control Designer. For example, when two office rooms are to be put together into one group office, it is enough to delete the existing hatched function areas and to create a new area with the dimension of the new group office (see illustration below). The strips show the automatically generated bindings between the sensors (green), controllers (yellow) and actuators (red).

With the help of e.control Manager which can be obtained separately, users can independently rearrange rooms with the existing hardware, as shown in the above example, and carry out certain management functions. Thus for the first time in bus technology, users are in a position to make use of the flexibility and efficiency of a modern room automation system like e.control even without the specialist know-how.
Planning with e.control™ - it’s child’s play!

Planning room automation

Room automation is not simply room automation! Every building project has its own special features and other prerequisites. Nevertheless, planning with e.control is easy and comprehensible. Here the e.control CD comes in handy with its extensive product and planning information which can either be viewed directly from the CD itself or installed on a computer. The tool consists of an Explorer tree, a short description, a product preview picture and a document window. The Explorer tree enables access to all important product information such as

- product catalogue,
- price list,
- technical data sheets,
- application descriptions and
- installation instructions.

A special configuration tool helps to determine the correct distribution box for flexible-axis room automation solutions. The tool is started from the Explorer and awaits axis-related information about the field devices to be integrated in the automation system, such as lighting, sunblind or window motors and damper actuators, as well as the selection of room control devices (see illustration on the right). The results generated are the precise parts of the distribution box, a list of all devices required, including the minimum quantity of infrastructure components, and a cost estimate.

The additional auxiliary tools for preparing detailed tenders perfectly round off the CD.
e.control™ product overview

- ALEX TE commissioning software
- ALEX TE Designer Suite
- IPLONGATE OPC data server
- LPA protocol analyser and LSD system diagnostic tool

Software
- LON interfaces
- Power supplies and terminators
- LON routers
- LON gateways

Infrastructure
- LON touch panel
- LON room control panels with integrated temperature control
- Wireless room control devices and sensors
- LON radio receivers
- LON multisensors and occupancy sensors

Panels
- LON lighting actuators
- LON dimmers
- LON sunblind actuators
- LON combined actuators for lights and sunblinds
- LON digital and analogue outputs
- LON digital and analogue inputs
- LON in-wall analogue output

Actuators
- LON M series - the modular concept
- LON M series system cabinets
- LON M series lighting and sunblind actuators
- LON M series digital and analogue input and output modules

FastCon
- LON FastCon lighting actuators
- LON FastCon sunblind actuators
- LON FastCon combined actuators for lights and sunblinds
- LON fire and smoke damper modules

Weather
- LON compact weather sensor
- LON weather station

Controller
- LON sun tracking controller
- LON application controller
- Accessories
ALEX TE commissioning software

Figure Specification Technical data Order No.

ALEX TE
LON commissioning tool

- Professional software for system design and commissioning of LON networks
- Software runs as local LNS client or as lightweight or fullweight client for remote network access, thus multiple ALEX TE can access the same LON network concurrently
- Integrated browser for monitoring and changing network variables and configuration properties
- Includes device manager for fast collecting, downloading and managing large numbers of LON devices concurrently
- Includes product database for device and application management
- Auto-backup automatically saves opened project database in background
- Includes LNS TE server licence and 64 device credits*
- Available Languages: English and German

Consisting of:
- ALEX TE
- LNS TE server
- 64 device credits*

System requirements:
- Windows 2000, XP, 2003 Server
- USB port
- LON network interface for LON TP/XF1250 or TP/FT-10 segment mode (p. 38)
- LAN-Port (10/100 Base-T) for LON/IP or remote access via LNS server

ALEX TE Design Suite
Graphical commissioning tool

- Graphical software tool for network design of e.control automation systems
- Integrated function library automatically binds and parameterises all e.control automation devices
- Room layout and functionality can be changed graphically at any time
- Enables device management on mouse-click: test, reset, online, offline, download etc.
- Software runs as local LNS client or as lightweight or fullweight client for remote network access
- e.control Manager** integrator licence included for testing the runtime environment for the end user
- Includes ALEX TE software
- Includes LNS TE server licence
- Available languages: English and German

Consisting of:
- ALEX TE
- e.control Designer
- e.control Manager Integr. licence**
- LNS TE Server
- 64 device credits*

System requirements:
- Windows 2000, XP, 2003 Server
- USB port
- LON network interface for LON TP/XF1250 or TP/FT-10 segment mode (p. 38)
- LAN-Port (10/100 Base-T) for LON/IP or remote access via LNS server

e.control Manager runtime licence:
- e.control Manager open (unlimited) 092 933
- e.control Manager 250 (<= 250 devices) 092 934
- e.control Manager 750 (<= 750 devices) 092 935

* Usage of ALEX TE or Design Suite requires device credits for each commissioned LON node.
** Not for resale. Licensed to system integrator only. e.control Manager runtime licence for end users must be purchased separately.
# OPC data server, network diagnostics and analysis

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IPLONGATE</strong>&lt;br&gt; LNS OPC data server</td>
<td></td>
<td><strong>IPLONGATE open</strong>&lt;br&gt; <strong>IPLONGATE 150</strong>&lt;br&gt; <strong>IPLONGATE 600</strong></td>
<td><strong>094 031</strong>&lt;br&gt; <strong>094 041</strong>&lt;br&gt; <strong>094 051</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consisting of:&lt;br&gt; <strong>IPLONGATE OPC server</strong>&lt;br&gt; <strong>LNS TE Server</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>System requirements:</strong>&lt;br&gt; Windows 2000, XP, 2003 Server&lt;br&gt; USB port&lt;br&gt; LON network interface&lt;br&gt; for LON TP/XF1250 or TP/FT-10 segment mode (p. 38)&lt;br&gt; LAN-Port (10/100 Base-T) for LON/IP or remote access via LNS server</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>LPA-SW</strong> for TP/XF and TP/FT&lt;br&gt; <strong>LPA-IP</strong> for LON/IP</td>
<td><strong>LPA-SW</strong>&lt;br&gt; <strong>LPA-IP</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>System requirements:</strong>&lt;br&gt; Windows 2000, XP, 2003 Server&lt;br&gt; LPA-SW: NIC interface (p. 38)&lt;br&gt; LPA-IP: LAN-Port (10/100Base-T)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>LSD-SW</strong>&lt;br&gt; <strong>System requirements:</strong>&lt;br&gt; Windows 2000, XP, 2003 Server&lt;br&gt; NIC network interface (p. 38) or L-switch or L-IP (pp. 40f.)</td>
<td></td>
</tr>
</tbody>
</table>
LON interfaces

**NIC709-PCI**
LON interface card for PCI bus

- PC interface connecting to LON networks via TP/FT-10 or TP/XF-1250 segments
- Compatible with LNS applications in high performance LNS/VNI access mode
- Simultaneous operation of LNS applications and LPA or LSD tools
- Software driver for Windows 2000, XP, 2003 Server, Vista

**NIC709-USB**
LON interface for USB

- USB interface connecting to LON networks via TP/FT-10 or TP/XF-1250 segments
- Compatible with LNS applications in high performance LNS/VNI access mode
- Simultaneous operation of LNS applications and LPA or LSD tools
- Software driver for Windows 2000, XP, 2003 Server, Vista

**SALLY**
LON interface for RS232

- Serial interface between PC and TP/FT-10 segments, usable for remote maintenance and remote control in combination with modem
- NSI compatible with LNS 2, 3 and TE based tools
- Includes software driver for Windows 2000, XP, 2003 Server
- Includes power supply and serial PC and modem cable (9-pole)

**NIC709-IP3E100 / NIC709-IP1E100**
LON interface for Ethernet

- LAN interface for LON networks with TP/FT-10 or TP/XF-1250 segments
- Compatible with LNS applications in high performance LNS/VNI access mode
- Simultaneous operation of LNS applications and LPA or LSD tools

**Technical data**

<table>
<thead>
<tr>
<th>NIC709-PCI</th>
<th>NIC709-USB</th>
<th>NIC709-IP3E100 / NIC709-IP1E100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network:</strong></td>
<td>TP/FT-10 (78kbps) or TP/XF-1250 (1,25Mbps)</td>
<td><strong>Network:</strong></td>
</tr>
<tr>
<td><strong>Power supply:</strong></td>
<td>via PCI-Bus (&lt;250mA)</td>
<td>TP/FT-10 (78kbps) or TP/XF-1250 (1,25Mbps)</td>
</tr>
<tr>
<td><strong>Metrics:</strong></td>
<td>(HxWxD) 135 x 96 x 20mm</td>
<td></td>
</tr>
</tbody>
</table>

**Order No.**

<table>
<thead>
<tr>
<th>NIC709-PCI</th>
<th>NIC709-USB</th>
<th>NIC709-IP3E100 / NIC709-IP1E100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>051 010</td>
</tr>
</tbody>
</table>
## Power supplies and terminators

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
</table>
| ![](sistema_SV15.png) | sistema SV15  
**Power supply 24V DC**  
- Regulated and stabilised power supply for LON devices with 24VDC operating voltage  
- Rated output current: 1,3A  
- Short-circuit and overload proof  
- High efficiency  
- Connectable in parallel  | Voltage:  
primary 120-230V AC, 50/60Hz  
secondary 24V DC  
Power:  
31 W (1,3A secondary)  
Metrics/mounting:  
(HxWxD) 90(45) x 54 x 55mm  
DIN rail mounting | 100 150 |
| ![](sistema_SV25.png) | sistema SV25  
**Power supply 24V DC**  
- Regulated and stabilised power supply for LON devices with 24VDC operating voltage  
- Rated output current: 2,5A  
- Short-circuit and overload proof  
- High efficiency  
- Connectable in parallel  | Voltage:  
primary 120-230V AC, 50/60Hz  
secondary 24V DC  
Power:  
60 W (2,5A secondary)  
Metrics/mounting:  
(HxWxD) 90(45) x 72 x 55mm  
DIN rail mounting | 100 250 |
| ![](sistema_LT-13_LT-33.png) | sistema LT-13 / LT-33  
**LON terminator**  
- Bus termination for TP/FT-10 segments (free topology or line topology) or TP/XF-1250 segments (line topology)  
- Includes 2 termination elements  | Versions:  
LT-33 for 2 TP/FT-10 segments in free or line topology  
LT-13 for TP/XF 1250 and TP/FT-10 segment (free or line topology)  
Metrics/mounting:  
(HxWxD) 85(45) x 17 x 60mm  
DIN rail mounting | 100 033  
100 013 |
| ![](sistema_T10-UP.png) | sistema T10-UP  
**LON Terminator (flush mounting)**  
- Bus termination for TP/FT-10 segments in free topology or line topology for flush mounting  
- Connecting directly on clamp of flush devices  | Versions:  
T10F-UP for TP/FT-10 free topology  
T10L-UP for TP/FT-10 line topology  
Metrics/mounting:  
(HxWxD) 25 x 15 x 35mm  
mounting in flush mounting sockets | 200 010  
200 011 |
## LON routers

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT-33</td>
<td>LON repeater</td>
<td>Ports: port 1-2: 2 x TP/FT-10</td>
<td>RT-33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power supply: 24V DC, max. 20mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Termination: selectable: - / 52 / 107 Ω (per segment)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Metrics/mounting: (HxWxD) 85(45) x 52,5 x 60mm DIN rail mounting</td>
<td></td>
</tr>
</tbody>
</table>

### LS-33 CB / LS-13 CB

LON 2 port router
- For physical separation and logic connection of two segments in TP/FT-10 networks
- Configurable as learning LON switch (plug&play) or configured router
- Service pin and diagnostic LED
- Firmware update and network diagnostics via LSD-tool (p.37)

**Versions/ports:**
- LS-33 C 2 x TP/FT-10
- LS-13 C TP/XF1250 + TP/FT-10

**Power supply:**
9-35V DC, 12-24V AC 50/60Hz max. 200mA@24V

**Termination:**
separately for each segment (p. 39)

**Metrics/mounting:**
(HxWxD) 90(45) x 104 x 60mm DIN rail mounting

### LS-333 C / LS-133 C

LON 3 port router
- For physical separation and logic connection of three segments in TP/FT-10 networks
- Configurable as learning LON switch (plug&play) or configured router
- Diagnostic LED
- Firmware update and network diagnostics via LSD-tool (p.37)

**Versions/ports:**
- LS-333 C 3 x TP/FT-10
- LS-133 C TP/XF1250 + 2 x TP/FT-10

**Power supply:**
9-35V DC, 12-24V AC 50/60Hz max. 200mA@24V

**Termination:**
separately for each segment (p. 39)

**Metrics/mounting:**
(HxWxD) 90(45) x 157 x 60mm DIN rail mounting

### LS-13333 C

LON 5 port router
- For physical separation and logic connection of 4 TP/FT-10 and one TP/XF1250 segment
- TP/XF port can be used to connect to high performance backbones
- Configurable as learning LON switch (plug&play) or configured router
- Diagnostic LED
- Firmware update and network diagnostics via LSD-tool (p.37)

**Ports:**
- port 1 TP/XF1250
- port 2-6 4 x TP/FT-10

**Power supply:**
9-35V DC, 12-24V AC 50/60Hz max. 200mA@24V

**Termination:**
separately for each segment (p. 39)

**Metrics/mounting:**
(HxWxD) 90(45) x 157 x 60mm DIN rail mounting
## LON/IP routers

<table>
<thead>
<tr>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L-IP 3ECTB</strong> LON/IP router</td>
<td>Routes packets between TP/FT-10 segment and IP networks</td>
<td>LIP-3ECTB</td>
</tr>
<tr>
<td></td>
<td>Preferably used as LON/IP backbone router</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Build-in web server for easy configuration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integrated EIA-852 configuration server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protocol analysis via LPA-IP tool</td>
<td></td>
</tr>
<tr>
<td><strong>L-IP 1ECTB</strong> LON/IP router</td>
<td>Routes packets between TP/XF-1250 segments and IP networks</td>
<td>LIP-1ECTB</td>
</tr>
<tr>
<td></td>
<td>Preferably used as connector between TP/XF-backbones and IP networks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Build-in web server for easy configuration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integrated EIA-852 config server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protocol analysis via LPA-IP tool</td>
<td></td>
</tr>
<tr>
<td><strong>L-IP 33ECTB</strong> LON/IP 2 port router</td>
<td>Routes packets between two TP/FT-10 segments and IP networks</td>
<td>LIP-33ECTB</td>
</tr>
<tr>
<td></td>
<td>Preferably used as LON/IP backbone router</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Build-in web server for easy configuration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integrated EIA-852 configuration server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protocol analysis via LPA-IP tool</td>
<td></td>
</tr>
<tr>
<td><strong>L-IP 3333ECTB</strong> LON/IP 4 port router</td>
<td>Routes packets between four TP/FT-10 segments and IP networks</td>
<td>LIP-3333ECTB</td>
</tr>
<tr>
<td></td>
<td>Preferably used as LON/IP backbone router</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Build-in web server for easy configuration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integrated EIA-852 configuration server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protocol analysis via LPA-IP tool</td>
<td></td>
</tr>
</tbody>
</table>

### Ports:
- port 1: 100 Base-T (Ethernet)
- port 2: TP/FT-10
- port 1: 100 Base-T (Ethernet)
- port 2: TP/XF1250
- port 1: 100 Base-T (Ethernet)
- port 2: 2 x TP/FT-10
- port 1: 100 Base-T (Ethernet)
- port 2: 4 x TP/FT-10

### Power supply:
- 9-35V DC, 12-24V AC 50/60Hz
- max. 200mA@24V

### Termination:
- separately for TP/FT segment (p. 39)
- separately for each TP/FT segment (p. 39)
- separately for each TP/FT segment (p. 39)

### Metrics/Mounting:
- (HxWxD) 90(45) x 104 x 60mm DIN rail mounting
- (HxWxD) 90(45) x 104 x 60mm DIN rail mounting
- (HxWxD) 90(45) x 104 x 60mm DIN rail mounting

---

**LON/IP router**

- Routes packets between TP/FT-10 segment and IP networks
- Preferably used as LON/IP backbone router
- Build-in web server for easy configuration
- Integrated EIA-852 configuration server
- Protocol analysis via LPA-IP tool

**LON/IP router**

- Routes packets between TP/XF-1250 segments and IP networks
- Preferably used as connector between TP/XF-backbones and IP networks
- Build-in web server for easy configuration
- Integrated EIA-852 config server
- Protocol analysis via LPA-IP tool

**LON/IP router**

- Routes packets between two TP/FT-10 segments and IP networks
- Preferably used as LON/IP backbone router
- Build-in web server for easy configuration
- Integrated EIA-852 configuration server
- Protocol analysis via LPA-IP tool

**LON/IP router**

- Routes packets between four TP/FT-10 segments and IP networks
- Preferably used as LON/IP backbone router
- Build-in web server for easy configuration
- Integrated EIA-852 configuration server
- Protocol analysis via LPA-IP tool
LON gateways

### L-GATE
**LON BACnet gateway**
- Gateway for transmitting telegrams between LON and BACnet networks
- Supports mapping of dynamic network variables to BACnet server objects
- Supports alarming, scheduling, calendar and trending in BACnet and LON networks
- Configurable via LNS plug-in

<table>
<thead>
<tr>
<th>Ports:</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>port 1</td>
<td>LGATE-900</td>
</tr>
<tr>
<td>port 2</td>
<td></td>
</tr>
<tr>
<td>port 3</td>
<td></td>
</tr>
</tbody>
</table>

**Technical data**
- **Ports:**
  - port 1 100 Base-T (BACnet/IP, LON/IP)
  - port 2 TP/FT-10 (LON)
  - port 3 MS/TP (BACnet)
- **Power supply:**
  - 9-35V DC, 12-24V AC 50/60Hz
  - max. 200mA@24V
- **Metrics/mounting:**
  - (HxWxD) 90(45) x 104 x 60mm
  - DIN rail mounting

### L-INX
**LON information exchange server**
- Gateway for accessing LON network variables and configuration properties via OPC XML/DA web services
- Supports alarming, scheduling, calendar and trending
- Additional features:
  - L-INX 100: build-in LON/IP router
  - L-INX 101: RNI remote interface
- Configurable via LNS plug-in

<table>
<thead>
<tr>
<th>Versions:</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-INX 100 with LON/IP routing</td>
<td>LINX-100</td>
</tr>
<tr>
<td>L-INX 101 with RNI remote interface</td>
<td>LINX-101</td>
</tr>
</tbody>
</table>

**Technical data**
- **Ports:**
  - port 1 100 Base-T (OPC, LON/IP)
  - port 2 TP/FT-10 (LON)
- **Power supply:**
  - 9-35V DC, 12-24V AC 50/60Hz
  - max. 200mA@24V
- **Metrics/mounting:**
  - (HxWxD) 90(45) x 104 x 60mm
  - DIN rail mounting

### L-PROXY
**LON-to-LON gateway**
- Gateway for transmitting telegrams between 3 LON/IP and 2 TP/FT-10 segments
- Provides data interchange across domain boundaries and different LNS databases
- Proxy functionality by mapping input NV’s to output NV’s (e.g. to overcome alias limitations)
- Configurable via LNS plug-in

<table>
<thead>
<tr>
<th>Ports:</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>port 1</td>
<td>LP-33E100</td>
</tr>
<tr>
<td>port 2</td>
<td></td>
</tr>
<tr>
<td>port 3</td>
<td></td>
</tr>
</tbody>
</table>

**Technical data**
- **Ports:**
  - port 1 100 Base-T (LON/IP)
  - port 2-3 2 x TP/FT-10 (LON)
- **Power supply:**
  - 9-35V DC, 12-24V AC 50/60Hz
  - max. 200mA@24V
- **Metrics/mounting:**
  - (HxWxD) 90(45) x 104 x 60mm
  - DIN rail mounting
**LON touch panel**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>dialog T</td>
<td>LON touch panel</td>
<td>Model: alu anodised</td>
<td>341 511 S</td>
</tr>
</tbody>
</table>

- Port 1: 100 Base-T (Ethernet)
- Port 2: TP/FT-10 (LON)

- **Power supply:** 24V AC/DC, max. 330mA

- **Equipment:**
  - display 320 x 240 pixel, 256 colours
  - backlit
  - touch-sensitive display
  - real time clock, battery backed
  - temperature sensor (optional)

- **Metrics/mounting:**
  - (HxWxD) 165 x 210 x 60mm
  - with box for cavity wall or flush mounting

- Comfortable display and control panel for air conditioning, lighting, sunblind, window control etc.
- Front made of anodised aluminium
- Backlit graphic colour display with 320x240 pixels and touch-sensitive surface
- Free configurable user interface with WYSIWYG editor
- Configurable dynamic or static network interface with up to 512 network variables
- Supports alarming, scheduling, calendar and trend logging including display and manipulation of local or remote calendars and schedules
- Logic data processing
- Integrated real-time clock with NTP time synchronisation over TCP/IP
- Integrated VNC server for remote access with all VNC clients (e.g. for PCs, PDAs) over TCP/IP
- Integrated RNI Remote network interface for accessing the LON network over TCP/IP
- Interfacing LON networks via Ethernet (LON/IP) or TP/FT-10 port (selectable)
# Integrated LON room control panel
- Comfortable display and control unit for air conditioning, lighting, sunblind, window, fan speed control etc.
- White backlit display with 4x16 characters, 3 LEDs and buzzer
- Front and push and turn knob made of anodised aluminium
- Integrated temperature sensor
- Internal real time clock and scheduler with 24 switching points for operating mode
- Free configurable menu for lighting, sunblind and window controls as well as setpoint adjustment, operating mode, function, and ventilation level. Intuitive operation via log on/log-off, favourites and scenes
- With functional object „Message Indicator“ for displaying any text messages e.g. from SCADA systems on the display
- Application programs for different use with the following LonMark profiles available:
  - „Real Time Keeper (3300)“
  - „SCC Command Module (8090)“
  - „Space Comfort Ctrl (850x)“
  - „Thermo Controller (6111)“
  - „Occupancy Controller (3071)“
  - „Scene Panel (3250)“
  - „Scene Controller (3251)“
  - „Switch (3200)“
  - „Message Indicator (1)"

### Available applications*:
- SC341501CM: for external temperature controller with:
  1 x Real Time Keeper
  1 x SCC Command M.
  1 x Occupancy Ctrl.
  1 x Thermo Controller
  1 x Message Indicator
  1 x Scene Panel
  14 x Switch

- SC341501CC: with internal controller for radiator/chilled ceiling:
  1 x Real Time Keeper
  1 x Occupancy Ctrl.
  1 x Space Comfort Ctrl.
  1 x Thermo Controller
  1 x Message Indicator
  1 x Scene Panel
  8 x Switch

- SC341501FC: with internal controller for fan coil:
  1 x Real Time Keeper
  1 x Occupancy Ctrl.
  1 x Space Comfort Ctrl.
  1 x Thermo Controller
  1 x Message Indicator
  1 x Scene Panel
  8 x Switch

---

# LUMINA T6

## LON binary input module
- Compact flush mounting device connecting installation push buttons to LON networks for lighting or sunblind control, scene re-calling or log-on/-off
- 6 inputs for floating contacts
- 2 outputs 24V, 100mA for control lamps, relays etc.
- Suitable for all installation push buttons, fits into deep flush mounting or cavity wall socket

### Network:
TP/FT-10 (FT10)

### Power supply:
24V AC/DC, max. 50mA

### Metrics/mounting:
(HxWxD) 50 x 50 x 20mm
in cavity wall or flush mounting sockets

### Available applications:
- SC211006EC: 6 x Switch
  - 2 x Lamp Actuator
- SC211006TC: 6 x Switch
  - 2 x Lamp Actuator
  - 1 x Thermo Ctrl.
# LON room control panels

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="dialog8.png" alt="Image" /></td>
<td><strong>dialog 8</strong> LON LCD room control panel</td>
<td><strong>Model:</strong>&lt;br&gt;8 buttons, pure white&lt;br&gt;8 buttons, anthracite&lt;br&gt;8 buttons, aluminium&lt;br&gt;12 buttons, pure white&lt;br&gt;12 buttons, anthracite&lt;br&gt;12 buttons, aluminium</td>
<td>341 508 W8&lt;br&gt;341 508 B8&lt;br&gt;341 508 A8&lt;br&gt;341 508 W12&lt;br&gt;341 508 B12&lt;br&gt;341 508 A12</td>
</tr>
<tr>
<td><img src="climaLCD.png" alt="Image" /></td>
<td><strong>clima LCD</strong> LON LCD room temperature controller with 4 DI</td>
<td><strong>Model:</strong>&lt;br&gt;pure white&lt;br&gt;anthracite&lt;br&gt;aluminium</td>
<td>231 505 W&lt;br&gt;231 505 B&lt;br&gt;231 505 A</td>
</tr>
<tr>
<td><img src="climaLCD-CC.png" alt="Image" /></td>
<td><strong>clima LCD-CC</strong> LON LCD room temperature controller with 2 DI / 2 AO 0-10V</td>
<td><strong>Network:</strong>&lt;br&gt;TP/FT-10 (FTT10)</td>
<td>SC231505CM f. external temp. controller&lt;br&gt;SC231505CC f. radiators/chilled ceiling&lt;br&gt;SC231505FC f. fan coil unit</td>
</tr>
</tbody>
</table>

**Scale approx. 1:3**

*Additional applications on request (e.g. for VAV equipment)*

---

**Model:**
- **8 buttons, pure white**
- **8 buttons, anthracite**
- **8 buttons, aluminium**
- **12 buttons, pure white**
- **12 buttons, anthracite**
- **12 buttons, aluminium**

**Network:**
- TP/FT-10 (FTT10)

**Power supply:**
- 24V AC/DC, max. 100mA

**Metrics/mounting:**
- (HxWxD) 154 x 83 x 45mm in cavity wall or flush mounting sockets

**Available applications**:
- SC341508CM f. external temp. controller
- SC341508CC f. radiators/chilled ceiling
- SC341508FC f. fan coil unit

---

**Dialog 8**
- Comfortable display and control unit for air conditioning, lighting, sunblind, window control etc.
- White backlit display for temperatures, time, date and different symbols for controller status
- Available in 3 colours with 8 or 12 buttons, optional glass- or stainless steel frames
- Integrated temperature sensor
- Application programs with following LonMark profiles available:
  - „SCC Command Module (8090)”
  - „Space Comfort Ctrl (850x)”
  - „Thermo Controller (6111)”
  - „Occupancy Controller (3071)”
  - „Scene Panel (3250)”
  - „Switch (3200)”

**Clima LCD**
- Control panel with temperature sensor, LCD and 4 buttons for setpoint or fan speed adjustment and presence
- 4 inputs for floating contacts, e.g. for light or sunblind switches or presence button
- Available in 3 colours, suitable for
  - Berker S1, B1, B3, B7 glass
  - Gira E2, Event, Esprit
  - Jung A500, A plus, A creation
  - Merten M-Plan, M-Star, M-Arc
- Applications with following profiles:
  - „SCC Command Module (8090)”
  - „Space Comfort Ctrl (850x)”
  - „Thermo Controller (6111)”
  - „Occupancy Controller (3071)”
  - „Scene Panel (3250)”
  - „Switch (3200)”

**Clima LCD-CC**
- Same as dialog 4 but with 2 inputs for floating contacts (e.g. window contact, occupancy sensor) and 2 analogue outputs with 0-10V for valve actuators (p. 75)
- Available in 3 colours, suitable for
  - Berker S1, B1, B3, B7 glass
  - Gira E2, Event, Esprit
  - Jung A500, A plus, A creation
  - Merten M-Plan, M-Star, M-Arc
- Application as above, additionally:
  - „Damper Actuator (8110)”

**Network:**
- TP/FT-10 (FTT10)

**Power supply:**
- 24V AC/DC, max. 60mA

**Metrics/mounting:**
- (HxWxD) 71 x 71 x 49mm in cavity wall or flush mounting sockets

**Available applications**:
- SC231505CM f. external temp. controller
- SC231505CC f. radiators/chilled ceiling
- SC231505FC f. fan coil unit

---

*Example of use: frame and switches not included*
### Specification

**Figure**  
LON room climate controller

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>clima RCM</td>
<td>LON room temperature controller with 4 DI</td>
</tr>
<tr>
<td>clima RCM-CC</td>
<td>LON room temperature controller with 6 DI / 2 AO 0-10V</td>
</tr>
<tr>
<td>clima RCM-FC</td>
<td>LON room temperature controller with 6 DI plus FANCOIL BOX</td>
</tr>
</tbody>
</table>

**Technical data**

- **Order No.**
  - 231 302 W
  - 231 302 B
  - 231 302 A
  - 231 303 W
  - 231 303 B
  - 231 303 A
  - 231 305 W
  - 231 305 B
  - 231 305 A

- **Network:** TP/FT-10 (FTT10)

- **Power supply:** 24V AC/DC, max. 40mA

- **Metrics/mounting:** (HxWxD) 70 x 70 x 41mm in cavity wall or flush mounting sockets

- **Available applications:**
  - SC231302CM f. external temp. controller
  - SC231302CC f. radiators/chilled ceiling
  - SC231302FC f. fan coil unit

- **Network:** TP/FT-10 (FTT10)

- **Power supply:** 24V AC/DC, max. 40mA

- **Metrics/mounting:** (HxWxD) 71 x 71 x 41mm in cavity wall or flush mounting sockets

- **Available application:** SC231342CC f. radiator/chilled ceiling

- **Network:** TP/FT-10 (FTT10)

- **Power supply:** 24V AC/DC, max. 40mA

- **Metrics/mounting:** (HxWxD) 71 x 71 x 41mm in cavity wall or flush mounting sockets

- **Available application:** SC231342FC f. radiator/chilled ceiling

- **Network:** TP/FT-10 (FTT10)

- **Power supply:** 24V AC/DC, max. 40mA

- **Metrics/mounting:** (HxWxD) 71 x 71 x 41mm in cavity wall or flush mounting sockets

- **Available application:** SC231334CC f. radiator/chilled ceiling

- **Network:** TP/FT-10 (FTT10)

- **Power supply:** 24V AC/DC, max. 40mA

- **Metrics/mounting:** (HxWxD) 71 x 71 x 41mm in cavity wall or flush mounting sockets

- **Available application:** SC231334FC f. fan coil unit

**Order No.**

- 231 342 W
- 231 342 B
- 231 342 A
- 231 343 W
- 231 343 B
- 231 343 A
  
**Network:** TP/FT-10 (FTT10)

**Power supply:** 24V AC/DC, max. 40mA

**Metrics/mounting:** (HxWxD) 71 x 71 x 41mm in cavity wall or flush mounting sockets

**Available application:** SC231342FC f. radiator/chilled ceiling

**Order No.**

- 231 334 W
- 231 334 B
- 231 334 A
- 231 335 W
- 231 335 B
- 231 335 A

**Network:** TP/FT-10 (FTT10)

**Power supply:** 24V AC/DC, max. 40mA

**Metrics/mounting:** (HxWxD) 71 x 71 x 41mm in cavity wall or flush mounting sockets

**Available application:** SC231334FC f. fan coil unit

**Order No.**

- 231 321 W
- 231 321 B
- 231 321 A
- 231 325 W
- 231 325 B
- 231 325 A

**Network:** TP/FT-10 (FTT10)

**Power supply:** 24V AC/DC, max. 40mA

**Metrics/mounting:** (HxWxD) 71 x 71 x 41mm, in socket

**Available application:** SC231325FC f. fan coil unit
LON temperature controller for public buildings

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>clima RO</td>
<td>LON temperature controller for public buildings with 4 DI</td>
<td>Model: pure white&lt;br&gt;anthracite&lt;br&gt;aluminium</td>
<td>231 301 W&lt;br&gt;231 301 B&lt;br&gt;231 301 A</td>
</tr>
<tr>
<td></td>
<td>Continuous-action controller with temperature sensor and 2 LED’s for operation mode and heating or cooling activity</td>
<td>Network: TP/FT-10 (FTT10)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 inputs for floating contacts, e.g. light or sunblind switches, window contacts or occupancy sensors</td>
<td>Power supply: 24V AC/DC, max. 40mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Available in 3 colours, suitable for&lt;br&gt;- Berker S1, B1, B3, B7 glass&lt;br&gt;- Gira E2, Event, Esprit&lt;br&gt;- Jung A 500, A plus, A creation&lt;br&gt;- Merten M-Plan, M-Star, M-Arc</td>
<td>Metrics/mounting: (HxWxD) 70 x 70 x 49mm in cavity wall or flush mounting sockets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applications with following profiles:&lt;br&gt;„Space Comfort Ctrl (850x)“&lt;br&gt;„Thermo Controller (6111)“&lt;br&gt;„Occupancy Controller (3071)“&lt;br&gt;„Scene Panel (3250)“&lt;br&gt;„Switch (3200)“</td>
<td>Available applications*: SC231301CM external temp. controller&lt;br&gt;SC231301CC f. radiator/chilled ceiling&lt;br&gt;SC231301FC f. fan coil unit</td>
<td></td>
</tr>
</tbody>
</table>

| clima RO-CC | LON temperature controller with 2 DI / 2 AO 0-10V | Model: pure white<br>anthracite<br>aluminium | 231 341 W<br>231 341 B<br>231 341 A |
| | Same as clima RO but with 2 inputs for window contacts, dewpoint or occupancy sensors and 2 analogue outputs with 0-10V for valve actuators for radiators or chilled ceilings (p. 75) | Network: TP/FT-10 (FTT10) | |
| | Available in 3 colours, suitable for<br>- Berker S1, B1, B3, B7 glass<br>- Gira E2, Event, Esprit<br>- Jung A 500, A plus, A creation<br>- Merten M-Plan, M-Star, M-Arc | Power supply: 24V AC/DC, max. 40mA | |
| | Application as above, additionally:<br>„Damper Actuator (8110)“ | Metrics/mounting: (HxWxD) 70 x 70 x 49mm in cavity wall or flush mounting sockets | |
| | Available application: SC231341CC f. radiator/chilled ceiling | Available application: SC231341CC f. radiator/chilled ceiling | |

| clima RO-FC | LON temperature controller with 2 DI plus FANCOIL BOX | Model: pure white<br>anthracite<br>aluminium | 231 331 W<br>231 331 B<br>231 331 A |
| | Same as clima RO but with 2 inputs and external fancoil box for direct control of a fan coil unit with 3 staged fan and 2 continuous valve actuators (p. 75) | Network: TP/FT-10 (FTT10) | |
| | Available in 3 colours, suitable for<br>- Berker S1, B1, B3, B7 glass<br>- Gira E2, Event, Esprit<br>- Jung A 500, A plus, A creation<br>- Merten M-Plan, M-Star, M-Arc | Power supply: 24V AC/DC, max. 40mA | |
| | Application as above, additionally:<br>„Damper Actuator (8110)“ | Metrics/mounting: (HxWxD) 70 x 70 x 49mm in cavity wall or flush mounting sockets | |
| | Application as above, additionally:<br>SC231331FC for fan coil unit | Available application: SC231331FC for fan coil unit | |
## Wireless room control devices and sensors

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>dialog RC-T</strong> Wireless room temperature sensor</td>
<td><strong>Model:</strong> pure white, anthracite, aluminium</td>
<td>442 510 W, 442 510 A, 442 510 B</td>
</tr>
<tr>
<td></td>
<td><strong>Radio frequency/technology:</strong> 868,3 MHz (Enocean)</td>
<td><strong>Range:</strong> max. 30m inside</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Power supply:</strong> photovoltaic (&gt;200 lx@3h), battery-free</td>
<td><strong>Metrics/mounting:</strong> (HxWxD) 71 x 71 x 25 mm, adhere or screw on all plane surfaces</td>
<td></td>
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<tr>
<td></td>
<td><strong>Available in 3 colours, suitable for:</strong> - Berker S1, B1, B3, B7 glass</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>- Gira E2, Event, Esprit</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- Jung A 500, A plus, A creation</td>
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</tr>
<tr>
<td></td>
<td>- Merten M-Plan, M-Star, M-Arc</td>
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</tr>
<tr>
<td></td>
<td><strong>Dialog RC-TS</strong> Wireless room control device</td>
<td><strong>Model:</strong> pure white, anthracite, aluminium</td>
<td>442 511 W, 442 511 A, 442 511 B</td>
</tr>
<tr>
<td></td>
<td><strong>Radio frequency/technology:</strong> 868,3 MHz (Enocean)</td>
<td><strong>Range:</strong> max. 30m inside</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Power supply:</strong> photovoltaic (&gt;200 lx@3h), battery-free</td>
<td><strong>Metrics/mounting:</strong> (HxWxD) 71 x 71 x 25 mm, adhere or screw on all plane surfaces</td>
<td></td>
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<tr>
<td></td>
<td><strong>Available in 3 colours, suitable for:</strong> - Berker S1, B1, B3, B7 glass</td>
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<tr>
<td></td>
<td>- Gira E2, Event, Esprit</td>
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<td></td>
<td>- Jung A 500, A plus, A creation</td>
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<tr>
<td></td>
<td>- Merten M-Plan, M-Star, M-Arc</td>
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</tr>
<tr>
<td></td>
<td><strong>Radio frequency/technology/range:</strong> 868,3 MHz (Enocean), max. 30m inside</td>
<td><strong>Power supply:</strong> electrodynamic, battery-free</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Metrics/mounting:</strong> (HxWxD) 71 x 71 x 15 mm, adhere or screw on all plane surfaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Available in 3 colours, suitable for:</strong> - Berker S1, B1, B3, B7 glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Gira E2, Event, Esprit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Jung A 500, A plus, A creation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Merten M-Plan, M-Star, M-Arc</td>
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</tr>
<tr>
<td></td>
<td><strong>Radio frequency/technology/range:</strong> 868,3 MHz (Enocean), max. 30m inside</td>
<td><strong>Power supply:</strong> electrodynamic, battery-free</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Metrics/mounting:</strong> (HxWxD) 71 x 71 x 15 mm, adhere or screw on all plane surfaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Available in 3 colours, suitable for:</strong> - Berker S1, B1, B3, B7 glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Gira E2, Event, Esprit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Jung A 500, A plus, A creation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Merten M-Plan, M-Star, M-Arc</td>
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</tr>
</tbody>
</table>
# LON radio receivers

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lumina MS/RC-EB</td>
<td>Network: TP/FT-10 (FTT10)</td>
<td>911 303 C</td>
</tr>
<tr>
<td></td>
<td>LON multisensor w. radio receiver</td>
<td>Radio frequency/technology: 868,3 MHz (Enocean)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Combination of occupancy sensor, light sensor and radio receiver</td>
<td>Power supply: 24V AC/DC, max. 55mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Incorporates all controllers for integrated e.control room automation concept</td>
<td>Metrics(M)/fitting dimension(F): (Ø x D) M: 75 x 66mm, F: 65 x 48mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Applications with following profiles: Command Module (8090), Space Comfort Ctrl. (850x), Constant Light Ctrl. (3050), Thermo Ctrl. (6111), Occupancy Ctrl. (3071), Scene Panel (3250), Switch (3200)</td>
<td>Available application: SC911303CM f. external temp. controller SC911303CC f. radiator/chilled ceiling SC911303FC f. fan coil unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Network: TP/FT-10 (FTT10)</td>
<td>911 304 C</td>
</tr>
<tr>
<td></td>
<td>lumina MS/RC-AP</td>
<td>Radio frequency/technology: 868,3 MHz (Enocean)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LON multisensor w. radio receiver</td>
<td>Power supply: 24V AC/DC, max. 55mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ As above, for surface-mounting</td>
<td>Metrics: (Ø x D) 98 x 50mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Network: TP/FT-10 (FTT10)</td>
<td>441 301 C</td>
</tr>
<tr>
<td></td>
<td>dialog RC-E</td>
<td>Radio frequency/technology: 868,3 MHz (Enocean)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LON radio receiver</td>
<td>Power supply: 24V AC/DC, max. 30mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Gateway for converting radio telegrams of max. 16 sensors to LON messages via LonMark objects</td>
<td>Metrics/mounting: (HxWxD) 110 x 80 x 42mm, on-wall mounting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Suitable for integrated e.control room automation concept</td>
<td>Available applications: SC911303EC f. 16 switches/sensors SC911303xC f. 8 switches/2 controller</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Applications with following profiles: „Command Module (8090)“, „Temperature Sensor (1040)“, „Occupancy Sensor (1010)“, „Scene Panel (3250)“, „Switch (3200)“</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Model: pure white</td>
<td>412 901 W</td>
</tr>
<tr>
<td></td>
<td>dialog RC-F</td>
<td>Radio frequency/technology: 868,3 MHz (Enocean)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wireless window contact</td>
<td>Range: max. 30m inside</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Magnetic contact for monitoring window or door states</td>
<td>Power supply: photovoltaic (&gt;200lx@3h), battery-free</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Adhesive or screw mounting on plane surfaces</td>
<td>Metrics/mounting: (HxWxD) 110 x 19 x 15mm adhere or screw on window frame</td>
<td></td>
</tr>
</tbody>
</table>
## LON multisensors

<table>
<thead>
<tr>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>lumina MS3-EB</strong>&lt;br&gt;LON multisensor</td>
<td><strong>Network:</strong> TP/FT10 (FTT10)</td>
<td>911 103 C</td>
</tr>
<tr>
<td></td>
<td><strong>Power supply:</strong> 24V AC/DC, max. 50mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Optical detection (height 3m):</strong> sedimentary Ø 6,0m walking Ø 12,0m</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Metrics:</strong> (Ø x D) M: 75 x 66mm, F: 65 x 48mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Available application:</strong> SC911103EC: 1 x Light Sensor 1 x Occupancy Sensor 1 x Occupancy Ctrl. 1 x Constant Light Ctrl. 1 x SCC Command M. 1 x Scene Panel 5 x Switch</td>
<td></td>
</tr>
</tbody>
</table>

- Combination of occupancy sensor, light sensor and infrared receiver for mounting in suspended ceilings
- Integrated constant light controller for presence and luminance depending control of 1 or 2 groups of switched or dimmed light circuits
- Receives commands from IR remote control to set lights, sun blinds, scenes and fans

### lumina MS3-AP<br>LON multisensor

<table>
<thead>
<tr>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network:</strong> TP/FT10 (FTT10)</td>
<td></td>
<td>911 104 C</td>
</tr>
<tr>
<td><strong>Power supply:</strong> 24V AC/DC, max. 50mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Optical detection (height 3m):</strong> sedimentary Ø 6,0m walking Ø 12,0m</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Metrics:</strong> (ØxD) 98 x 50mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Available application:</strong> SC911103EC: objects as above</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- As above, for surface-mounting

### lumina MS-FB<br>Remote control for multisensors

<table>
<thead>
<tr>
<th>Specification</th>
<th>Power supply: 3V battery</th>
<th>910 111</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metrics:</strong> (HxWxD) 70x54x8mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Infrared remote control for multisensor lumina MS3 (see above) to control:
  - 5 lights or sunblinds
  - 5 scenes
  - 1 fan (3-speed)
  - log-on / log-off
- Maximum distance: 8m
## Occupancy sensors

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="lumina PM-DE" /></td>
<td><strong>lumina PM-DE</strong>&lt;br&gt;Occupancy sensor&lt;br&gt;PIR occupancy sensor with high sensitivity for suspended ceilings&lt;br&gt;Floating contacts for presence and lighting control, interconnectable with e.control binary input modules lumina T6 or lumina B8&lt;br&gt;Parameterisable via potentiometers or remote control (see below)</td>
<td><strong>Power supply:</strong>&lt;br&gt;24V AC/DC, max. 40mA</td>
<td>910 101</td>
</tr>
<tr>
<td><img src="image" alt="lumina PM-AP" /></td>
<td><strong>lumina PM-AP</strong>&lt;br&gt;Occupancy sensor&lt;br&gt;As above, for surface-mounting&lt;br&gt;Slave input for extending detection range in large areas with additional sensors</td>
<td><strong>Power supply:</strong>&lt;br&gt;24V AC/DC, max. 40mA</td>
<td>910 102</td>
</tr>
<tr>
<td><img src="image" alt="lumina PM-FB" /></td>
<td><strong>lumina PM-FB</strong>&lt;br&gt;Remote control for setup&lt;br&gt;Infrared remote control for setting up hold time and luminance threshold&lt;br&gt;Comfortable adjustment of all occupancy sensors with only one remote control</td>
<td><strong>Power supply:</strong>&lt;br&gt;3V battery</td>
<td>910 110</td>
</tr>
</tbody>
</table>
## LON lighting actuators with relays

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lumina RSA4</td>
<td>LON switch actuator 4 ports, 16A</td>
<td>RSA4 w/o hand operation</td>
<td>121 104 C</td>
</tr>
<tr>
<td>Relays module for independent switching of 4 electric loads with separate feed-in for each output</td>
<td>RSA4-b with hand operation</td>
<td>121 105 C</td>
<td></td>
</tr>
<tr>
<td>High-current relay contacts (120A) for capacitive lamp loads: incandescent lamps: 3000W halogen lamps: 2500W fluorescent lamps: 1500W comp.</td>
<td>Network/power supply: type: TP/FT-10 (FTT-10) voltage: 24V DC, max. 100mA</td>
<td>Metrics/mounting: (HxWxD) 85(45) x 88 x 60mm, DIN rail mounting</td>
<td>Available application: SC121104EC: 4 x Lamp Actuator 3 x Lamp Group Ctrl.</td>
</tr>
<tr>
<td>Stairway lighting, switch-on/off delay and scene memory with 10 scenes per channel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lumina RSA8</td>
<td>LON switch actuator 8 ports, 10A</td>
<td>RSA8 w/o hand operation</td>
<td>121 108 C</td>
</tr>
<tr>
<td>Relays module for independent switching of 8 electric loads with separate feed-in for 2 outputs</td>
<td>RSA8-b with hand operation</td>
<td>121 108 C</td>
<td></td>
</tr>
<tr>
<td>High-current relay contacts (120A) for capacitive lamp loads: incandescent lamps: 2000W halogen lamps: 1700W fluorescent lamps: 1000W comp.</td>
<td>Network/power supply: type: TP/FT-10 (FTT-10) voltage: 24V DC, max. 180mA</td>
<td>Metrics/mounting: (HxWxD) 85(45) x 105 x 60mm, DIN rail mounting</td>
<td>Available application: SC121108EC: 8 x Lamp Actuator 3 x Lamp Group Ctrl.</td>
</tr>
<tr>
<td>Stairway lighting, switch-on/off delay and scene memory with 10 scenes per channel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lumina RSA12</td>
<td>LON switch actuator 12 ports, 16A</td>
<td>RSA12 w/o hand operation</td>
<td>121 112 C</td>
</tr>
<tr>
<td>Relays module for independent switching of 12 electric loads with separate feed-in for each output</td>
<td>RSA12-b with hand operation</td>
<td>121 113 C</td>
<td></td>
</tr>
<tr>
<td>High-current relay contacts (120A) for capacitive lamp loads: incandescent lamps: 3000W halogen lamps: 2500W fluorescent lamps: 1500W comp.</td>
<td>Network/power supply: type: TP/FT-10 (FTT-10) voltage: 24V DC, max. 260mA</td>
<td>Metrics/mounting: (HxWxD) 85(45) x 192 x 60mm, DIN rail mounting</td>
<td>Available application: SC121112EC: 12 x Lamp Actuator 3 x Lamp Group Ctrl.</td>
</tr>
<tr>
<td>Stairway lighting, switch-on/off delay and scene memory with 10 scenes per channel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lumina RSA16</td>
<td>LON switch actuator 16 ports, 10A</td>
<td>RSA16 w/o hand operation</td>
<td>121 116 C</td>
</tr>
<tr>
<td>Relays module for independent switching of 16 electric loads with separate feed-in for 2 outputs</td>
<td>RSA16-b with hand operation</td>
<td>121 117 C</td>
<td></td>
</tr>
<tr>
<td>High-current relay contacts (120A) for capacitive lamp loads: incandescent lamps: 2000W halogen lamps: 1700W fluorescent lamps: 1000W comp.</td>
<td>Network/power supply: type: TP/FT-10 (FTT-10) voltage: 24V DC, max. 340mA</td>
<td>Metrics/mounting: (HxWxD) 85(45) x 175 x 60mm, DIN rail mounting</td>
<td>Available application: SC121116EC: 16 x Lamp Actuator 3 x Lamp Group Ctrl.</td>
</tr>
<tr>
<td>Stairway lighting, switch-on/off delay and scene memory with 10 scenes per channel</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# LON lighting actuators with 1-10V and DALI output

## Specification

<table>
<thead>
<tr>
<th>Figure</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumina RST4</td>
<td>w/o hand operation</td>
<td>121 144 C</td>
</tr>
<tr>
<td>Lumina RST4</td>
<td>w/ hand operation</td>
<td>121 145 C</td>
</tr>
<tr>
<td>Lumina RST8</td>
<td>w/o hand operation</td>
<td>121 148 C</td>
</tr>
<tr>
<td>Lumina RST8</td>
<td>w/ hand operation</td>
<td>121 149 C</td>
</tr>
<tr>
<td>Lumina RDAL8</td>
<td>w/o hand operation</td>
<td>121 168 C</td>
</tr>
<tr>
<td>Lumina RDAL16</td>
<td>w/o hand operation</td>
<td>121 166 C</td>
</tr>
</tbody>
</table>

### Lumina RST4

- **LON control output 1-10V, 4 ports**
  - Module for independent switching and dimming of 4 groups of electronic ballasts with 1-10V interface
  - High current relay contacts (120A) for fluorescent lamps with max. 1000W (comp.) per channel
  - Stairway lighting, switch-on/off delay, variable dimming ramp and scene memory with 10 scenes per channel

### Lumina RST8

- **LON control output 1-10V, 8 ports**
  - Module for independent switching and dimming of 8 groups of electronic ballasts with 1-10V interface
  - High current relay contacts (120A) for fluorescent lamps with max. 1000W (comp.) per channel
  - Stairway lighting, switch-on/off delay, variable dimming ramp and scene memory with 10 scenes per channel

### Lumina RDAL8

- **LON DALI controller 8 groups**
  - Module for supplying and independent controlling of up to 64 DALI devices divided in up to 8 groups
  - Monitoring of lamp status
  - Manual switch on/off operation
  - Commissioning via LNS plug-in or directly with PDA or notebook
  - Stairway lighting, switch-on/off delay, variable dimming ramp and scene memory for 10 scenes

### Lumina RDAL16

- **LON DALI controller 16 groups**
  - Module for supplying and independent controlling of up to 64 DALI devices divided in up to 16 groups
  - Monitoring of lamp status
  - Manual switch on/off operation
  - Commissioning via LNS plug-in or directly with PDA or notebook
  - Stairway lighting, switch-on/off delay, variable dimming ramp and scene memory for 10 scenes
### LON dimmers

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
</table>
| ![Image](image1.png) | lumina RDA2-UN  
LON universal dimmer 2 x 570W |  
- 2 port universal dimmer for incandescent lamps, high-voltage halogen lamps or low-voltage halogen lamps with wound or electronic transformers  
- Automatic load detection and overload protection  
- Parallel operation of both ports to increase output power to 1140VA  
- Integrated constant light controller for luminance-dependent control of 1 or 2 lamp groups  
- Scene memory with 10 scenes per channel | 121 152 C  
Network:  
TP/FT-10 (FTT10)  
Power supply:  
24V AC/DC, max. 20mA  
Load:  
2 x 10...570VA or  
1 x 10...1140VA resistive, inductive or capacitive load with auto-detection  
Metrics/mounting:  
(HxWxD) 85 x 120 x 60mm  
DIN rail mounting  
Available application:  
SC121152EC: 2 x Lamp Actuator  
1 x Lamp Group Ctrl.  
2 x Constant Light Ctrl. |  

| ![Image](image2.png) | lumina RDA4-UN  
LON universal dimmer 4 x 570W |  
- 4 port universal dimmer for incandescent lamps, high-voltage halogen lamps or low-voltage halogen lamps with wound or electronic transformers  
- Automatic load detection and overload protection  
- Parallel operation of 2 ports to increase output power to 1140VA  
- Integrated constant light controllers for luminance-dependent control of 1 or 2 lamp groups  
- Scene memory with 10 scenes per channel | 121 154 C  
Network:  
TP/FT-10 (FTT10)  
Power supply:  
24V AC/DC, max. 20mA  
Load:  
4 x 10...570VA or  
2 x 10...1140VA resistive, inductive or capacitive load with auto-detection  
Metrics/mounting:  
(HxWxD) 85 x 210 x 60mm  
DIN rail mounting  
Available application:  
SC121154EC: 4 x Lamp Actuator  
2 x Lamp Group Ctrl.  
4 x Constant Light Ctrl. |
### LON sunblind actuators for AC motors

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ombra RBA2</td>
<td><strong>LON sunblind actuator 2 ports</strong>&lt;br&gt;Relay module for 2 AC motors for sunblinds, shutters or windows&lt;br&gt;Motor load 6A, interlocked contacts and separate feed-in for each port&lt;br&gt;Appropriate to sun tracking and calc. of shading factors (p. 74)&lt;br&gt;Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel</td>
<td>RBA2 w/o hand operation&lt;br&gt;RBA2-b with hand operation&lt;br&gt;Network/power supply:&lt;br&gt;type: TP/FT-10 (FTT-10)&lt;br&gt;voltage: 24V DC, max. 60mA&lt;br&gt;Metrics/mounting:&lt;br&gt;(HxWxD) 85(45) x 70 x 60mm, DIN rail mounting&lt;br&gt;Available application: SC121202EC: 2 x Sunblind Actuator 1 x Sunbl. Group Ctrl.</td>
<td>121 202 C&lt;br&gt;121 203 C</td>
</tr>
<tr>
<td>ombra RBA4</td>
<td><strong>LON sunblind actuator 4 ports</strong>&lt;br&gt;Relay module for 4 AC motors for sunblinds, shutters or windows&lt;br&gt;Motor load 8A, interlocked contacts and separate feed-in for each port&lt;br&gt;Appropriate to sun tracking and calc. of shading factors (p. 74)&lt;br&gt;Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel</td>
<td>RBA4 w/o hand operation&lt;br&gt;RBA4-b with hand operation&lt;br&gt;Network/power supply:&lt;br&gt;type: TP/FT-10 (FTT-10)&lt;br&gt;voltage: 24V DC, max. 100mA&lt;br&gt;Metrics/mounting:&lt;br&gt;(HxWxD) 85(45) x 105 x 60mm, DIN rail mounting&lt;br&gt;Available application: SC121204EC: 4 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
<td>121 204 C&lt;br&gt;121 205 C</td>
</tr>
<tr>
<td>ombra RBA8</td>
<td><strong>LON sunblind actuator 8 ports</strong>&lt;br&gt;Relay module for 8 AC motors for sunblinds, shutters or windows&lt;br&gt;Motor load 8A, interlocked contacts and separate feed-in for each port&lt;br&gt;Appropriate to sun tracking and calc. of shading factors (p. 74)&lt;br&gt;Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel</td>
<td>RBA8 w/o hand operation&lt;br&gt;RBA8-b with hand operation&lt;br&gt;Network/power supply:&lt;br&gt;type: TP/FT-10 (FTT-10)&lt;br&gt;voltage: 24V DC, max. 180mA&lt;br&gt;Metrics/mounting:&lt;br&gt;(HxWxD) 85(45) x 175 x 60mm, DIN rail mounting&lt;br&gt;Available application: SC121208EC: 8 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
<td>121 208 C&lt;br&gt;121 209 C</td>
</tr>
<tr>
<td>ombra RBA12</td>
<td><strong>LON sunblind actuator 12 ports</strong>&lt;br&gt;Relay module for 12 AC motors for sunblinds, shutters or windows&lt;br&gt;Motor load 8A, interlocked contacts and separate feed-in for each port&lt;br&gt;Appropriate to sun tracking and calc. of shading factors (p. 74)&lt;br&gt;Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel</td>
<td>RBA12 w/o hand operation&lt;br&gt;RBA12-b with hand operation&lt;br&gt;Network/power supply:&lt;br&gt;type: TP/FT-10 (FTT-10)&lt;br&gt;voltage: 24V DC, max. 260mA&lt;br&gt;Metrics/mounting:&lt;br&gt;(HxWxD) 85(45) x 245 x 60mm, DIN rail mounting&lt;br&gt;Available application: SC121212EC: 12 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
<td>121 212 C&lt;br&gt;121 213 C</td>
</tr>
</tbody>
</table>
### LON sunblind actuators for DC and DMI motors

<table>
<thead>
<tr>
<th>Figure</th>
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</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram" /></td>
<td><strong>ombra RBA4-DC</strong>&lt;br&gt; LON sunblind actuator 4 ports, DC&lt;br&gt; Relay module for 24V DC motors for sunblinds, shutters or windows&lt;br&gt; 4 pole-reversing outputs with a max. load of 140W per channel, requires no separate control unit&lt;br&gt; Appropriate to sun tracking and calc. of shading factors (p. 74)&lt;br&gt; Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel&lt;br&gt; 4 x</td>
<td>Network/power supply:&lt;br&gt; type: TP/FT-10 (FTT-10)&lt;br&gt; voltage: 24V DC, max. 100mA&lt;br&gt; Metrics/mounting:&lt;br&gt; (HxWxD) 85(45) x 105 x 60mm, DIN rail mounting&lt;br&gt; Available application: SC121204EC: 4 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
<td>121 214 C RBA4-DC 121 215 C RBA4-DC-b</td>
</tr>
<tr>
<td><img src="image2" alt="Diagram" /></td>
<td><strong>ombra RBA4-DC</strong>&lt;br&gt; LON sunblind actuator 8 ports, DC&lt;br&gt; Relay module for 24V DC motors for sunblinds, shutters or windows&lt;br&gt; 8 pole-reversing outputs with a max. load of 140W per channel, requires no separate control unit&lt;br&gt; Appropriate to sun tracking and calc. of shading factors (p. 74)&lt;br&gt; Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel&lt;br&gt; 8 x</td>
<td>Network/power supply:&lt;br&gt; type: TP/FT-10 (FTT-10)&lt;br&gt; voltage: 24V DC, max. 180mA&lt;br&gt; Metrics/mounting:&lt;br&gt; (HxWxD) 85(45) x 175 x 60mm, DIN rail mounting&lt;br&gt; Available application: SC121208EC: 8 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
<td>121 218 C RBA8-DC 121 219 C RBA8-DC-b</td>
</tr>
<tr>
<td><img src="image3" alt="Diagram" /></td>
<td><strong>ombra RBA4-DMI</strong>&lt;br&gt; LON DMI sunblind actuator 4 ports&lt;br&gt; Module for four 230V DMI motors* with digital interface for sunblinds or shutters&lt;br&gt; Monitoring of motor states**&lt;br&gt; Appropriate to sun tracking and calc. of shading factors due to accurate positioning (&lt; 2°, p. 74)&lt;br&gt; Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel&lt;br&gt; 4 x</td>
<td>Network/power supply:&lt;br&gt; type: TP/FT-10 (FTT-10)&lt;br&gt; voltage: 24V DC, max. 25mA&lt;br&gt; Output connectors:&lt;br&gt; 4 x DMI (A/B), each with up to 4 motors in parallel**&lt;br&gt; Metrics/mounting:&lt;br&gt; (HxWxD) 85(45) x 88 x 60mm, DIN rail mounting&lt;br&gt; Available application: SC121244EC: 4 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
<td>121 244 C</td>
</tr>
<tr>
<td><img src="image4" alt="Diagram" /></td>
<td><strong>ombra RBA8-DMI</strong>&lt;br&gt; LON DMI sunblind actuator 8 ports&lt;br&gt; Module for eight 230V DMI motors* with digital interface for sunblinds or shutters&lt;br&gt; Monitoring of motor states**&lt;br&gt; Appropriate to sun tracking and calc. of shading factors due to accurate positioning (&lt; 2°, p. 74)&lt;br&gt; Parameterisable power-on, weather protection behaviour and scene memory&lt;br&gt; 8 x</td>
<td>Network/power supply:&lt;br&gt; type: TP/FT-10 (FTT-10)&lt;br&gt; voltage: 24V DC, max. 25mA&lt;br&gt; Output connectors:&lt;br&gt; 8 x DMI (A/B), each with up to 4 motors in parallel**&lt;br&gt; Metrics/mounting:&lt;br&gt; (HxWxD) 85(45) x 140 x 60mm, DIN rail mounting&lt;br&gt; Available application: SC121248EC: 8 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
<td>121 248 C</td>
</tr>
</tbody>
</table>

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* DMI = Digital motor interface by Elero (www.elero.com)
** Position and status feedback is disabled in group operation
## LON combined actuators for lights and sunblinds

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
</table>
| ![Diagram](image1) | **lumina RBSA12**  
LON combined actuator 2S-1MSE  
- Compact module for 2 groups of electric loads and 1 sunblind motor, expandable with ombra BA2 (p.65, order-no. 120 202) for 2 additional sunblind motors  
- Switch outputs rated 10A, with high current relays (120A) for capacitive and lamp loads  
- Motor output rated 8A with interlocked contacts  
| Network:  
TP/FT-10 (FTT10)  
Power supply:  
24V DC, max. 70mA  
Metrics/mounting:  
(HxWxD) 85(45) x 70 x 60mm  
DIN rail mounting  
Available application:  
SC151201EC: 2 x Lamp Actuator  
3 x Sunblind Actuator  
1 x Lamp Group Ctrl.  
2 x Sunbl. Group Ctrl.  | 151 201 C |
| ![Diagram](image2) | **lumina RBSA4**  
LON combined actuator 8DI-4S  
- Compact module for 4 groups of electric loads with 8 binary inputs for floating contacts (e.g. switches, occupancy sensors etc.)  
- Switch outputs rated 16A, with high current relays (120A) for capacitive and lamp loads, separate feed-in for each output  
| Network/power supply:  
type: TP/FT-10 (FTT10)  
voltage: 24V DC, max. 170mA  
Metrics/mounting:  
(HxWxD) 85(45) x 123 x 60mm  
DIN rail mounting  
Available application:  
SC111008SC: 8 x switch  
8 x Lamp actuator  
1 x Lamp Group Ctrl.  | 111 104 C |
| ![Diagram](image3) | **lumina RBSA8**  
LON combined actuator 8DI-8S  
- Compact module for 8 groups of electric loads with 8 binary inputs for floating contacts (e.g. switches, occupancy sensors etc.)  
- Switch outputs rated 10A, with high current relays (120A) for capacitive and lamp loads, separate feed-in for 2 outputs  
| Network/power supply:  
type: TP/FT-10 (FTT10)  
voltage: 24V DC, max. 250mA  
Metrics/mounting:  
(HxWxD) 85(45)x140x60mm  
DIN rail mounting  
Available application:  
SC111008SC: 8 x Switch  
8 x Lamp Actuator  
1 x Lamp Group Ctrl.  | 111 108 C |
| ![Diagram](image4) | **ombra RDBA4**  
LON combined actuator 8DI-4MSE  
- Compact module for 4 sunblind motors with 8 binary inputs for floating contacts (e.g. sunblind switches, window contacts etc.)  
- Motor outputs rated 8A with interlocked contacts, separate feed-in for each output  
| Network/power supply:  
type: TP/FT-10 (FTT10)  
voltage: 24V DC, max. 130mA  
Metrics/mounting:  
(HxWxD) 85(45)x140x60mm  
DIN rail mounting  
Available application:  
SC111008BC: 8 x Switch  
4 x Sunblind Actuator  
1 x Sunbl. Group Ctrl.  | 111 204 C |
### LON digital output modules (for thermoelectric and motor-driven actuators)

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
</table>
| ![clima RAA4](image) 4 x 2 x | **clima RAA4**  
LON digital output 4 ports  
- Triac outputs for 4 thermoelectric or 2 motor-driven actuators with 24 - 230V AC operating voltage  
- On/off, open/close or pulse width modulated operation selectable via software  
- Parameterisable pulse-duration and motor runtime  
- Automatic valve maintenance function during non-use periods  |  
Network:  
TP/FT-10 (FTT-10)  
Power supply:  
24V DC, max. 25mA  
Load:  
24-230V AC, max. 750mA per output  
Metrics/mounting:  
(HxWxD) 85 x 88 x 60mm  
DIN rail mounting  
Available application:  
SC121304EC: 4 x Damper Actuator  
3 x Damper Group Ctrl. | 121 324 C |
| ![clima RAA8](image) 8 x 4 x | **clima RAA8**  
LON digital output 8 ports  
- Triac outputs for 8 thermoelectric or 4 motor-driven actuators with 24 - 230V AC operating voltage  
- On/off, open/close or pulse width modulated operation selectable via software  
- Parameterisable pulse-duration and motor runtime  
- Automatic valve maintenance function during non-use periods  |  
Network:  
TP/FT-10 (FTT-10)  
Power supply:  
24V DC, max. 25mA  
Load:  
24-230V AC, max. 500mA per output  
Metrics/mounting:  
(HxWxD) 85 x 105 x 60mm  
DIN rail mounting  
Available application:  
SC121308EC: 8 x Damper Actuator  
3 x Damper Group Ctrl. | 121 328 C |
| ![clima RAA16](image) 16 x 8 x | **clima RAA16**  
LON digital output 16 ports  
- Triac outputs for 16 thermoelectric or 8 motor-driven actuators with 24 - 230V AC operating voltage  
- On/off, open/close or pulse width modulated operation selectable via software  
- Parameterisable pulse-duration and motor runtime  
- Automatic valve maintenance function during non-use periods  |  
Network:  
TP/FT-10 (FTT-10)  
Power supply:  
24V DC, max. 30mA  
Load:  
24-230V AC, max. 500mA per output  
Metrics/mounting:  
(HxWxD) 85 x 175 x 60mm  
DIN rail mounting  
Available application:  
SC121316EC: 16 x Damper Actuator  
3 x Damper Group Ctrl. | 121 326 C |
| ![clima RDAA8](image) 8 x 4 x 8 x | **clima RDAA8**  
LON combined module 8DI / 8 DO  
- Triac outputs for 8 thermoelectric or 4 motor-driven actuators with 24 - 230V AC operating voltage  
- 8 inputs for floating contacts, e.g. window contacts, dew point sensors or occupancy sensors  
- Parameterisable pulse-duration and motor runtime  
- Automatic valve maintenance function during non-use periods  |  
Network:  
TP/FT-10 (FTT-10)  
Power supply:  
24V DC, max. 110mA  
Load:  
24-230V AC, max. 750mA per output  
Metrics/mounting:  
(HxWxD) 85x140x60mm,  
DIN rail mounting  
Available application:  
SC111008AC: 8 x Binary Input  
8 x Damper Actuator  
3 x Damper Group Ctrl. | 111 328 C |
## LON analogue output modules (for continuous actuators)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>clima RAA4-10V</strong> LON analogue output 4 ports</td>
<td><strong>Network:</strong> TP/FT-10 (FTT-10)</td>
<td><strong>121 344 C</strong></td>
</tr>
<tr>
<td>Module for 4 actuators with analogue control signal</td>
<td><strong>Power supply:</strong> 24V DC, max. 100mA</td>
<td></td>
</tr>
<tr>
<td>Signal adjustable via software: 0-10V, 2-10V, 0-20mA or 4-20mA</td>
<td><strong>Output current:</strong> max. 20mA per output</td>
<td></td>
</tr>
<tr>
<td>Adjustable signal bounding to user-defined minimum and maximum values</td>
<td><strong>Metrics/mounting:</strong> (HxWxD) 85 x 88 x 60mm DIN rail mounting</td>
<td></td>
</tr>
<tr>
<td>Automatic valve maintenance function during non-use periods</td>
<td><strong>Available application:</strong> SC121304EC: 4 x Damper Actuator 3 x Damper Group Ctrl.</td>
<td></td>
</tr>
</tbody>
</table>

| **clima RAA8-10V** LON analogue output 8 ports | **Network:** TP/FT-10 (FTT-10) | **121 348 C** |
| Module for 8 actuators with analogue control signal | **Power supply:** 24V DC, max. 180mA | |
| Signal adjustable via software: 0-10V, 2-10V, 0-20mA or 4-20mA | **Output current:** max. 20mA per output | |
| Adjustable signal bounding to user-defined minimum and maximum values | **Metrics/mounting:** (HxWxD) 85 x 105 x 60mm DIN rail mounting | |
| Automatic valve maintenance function during non-use periods | **Available application:** SC121308EC: 8 x Damper Actuator 3 x Damper Group Ctrl. | |

| **clima RAA12-10V** LON analogue output 12 ports | **Network:** TP/FT-10 (FTT-10) | **121 342 C** |
| Module for 12 actuators with analogue control signal | **Power supply:** 24V DC, max. 260mA | |
| Signal adjustable via software: 0-10V, 2-10V, 0-20mA or 4-20mA | **Output current:** max. 20mA per output | |
| Adjustable signal bounding to user-defined minimum and maximum values | **Metrics/mounting:** (HxWxD) 85 x 158 x 60mm DIN rail mounting | |
| Automatic valve maintenance function during non-use periods | **Available application:** SC121312EC: 12 x Damper Actuator 3 x Damper Group Ctrl. | |

| **clima RAA16-10V** LON analogue output 16 ports | **Network:** TP/FT-10 (FTT-10) | **121 346 C** |
| Module for 16 actuators with analogue control signal | **Power supply:** 24V DC, max. 340mA | |
| Signal adjustable via software: 0-10V, 2-10V, 0-20mA or 4-20mA | **Output current:** max. 20mA per output | |
| Adjustable signal bounding to user-defined minimum and maximum values | **Metrics/mounting:** (HxWxD) 85 x 175 x 60mm DIN rail mounting | |
| Automatic valve maintenance function during non-use periods | **Available application:** SC121316EC: 16 x Damper Actuator 3 x Damper Group Ctrl. | |
## LON digital and analogue input modules

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
</table>
| lumina B8 LON binary input 8 ports | - 8 inputs for installation push buttons or other devices with floating contacts (e.g. window contacts, dew point sensors or occupancy sensors)  
- Powerful application for switching and dimming lamps, controlling sunblinds and recalling or storing scenes | Network: TP/FT-10 (FTT10)  
Power supply: 24V DC, max. 60mA  
Metrics/mounting: (HxWxD) 85(45) x 70 x 60mm  
DIN rail mounting  
Available application: SC111008EC: 8 x Switch | 111 008 C |

| clima RAE4 LON analogue input 4 ports | - Module with 4 independent channels for current or voltage measurement  
- Input signal separately selectable for each input channel: 0-10V, 2-10V, 0-20mA*, 4-20mA*  
- Application according to LonMark profile „Open Loop Sensor“ with modifiable network variables, supporting all scalar data types | Network: TP/FT-10 (FTT10)  
Power supply: 24V DC, max. 30mA  
Inputs: resolution: 10bit  
input resistance: 100kΩ  
Metrics/mounting: (HxWxD) 85(45) x 88 x 60mm  
DIN rail mounting  
Available application: SC111044EC: 4 x Open Loop Sensor | 111 044 C |

| clima RAE8 LON analogue input 8 ports | - Module with 8 independent channels for current or voltage measurement  
- Input signal separately selectable for each input channel: 0-10V, 2-10V, 0-20mA*, 4-20mA*  
- Application according to LonMark profile „Open Loop Sensor“ with modifiable network variables, supporting all scalar data types | Network: TP/FT-10 (FTT10)  
Power supply: 24V DC, max. 30mA  
Inputs: resolution: 10bit  
input resistance: 100kΩ  
Metrics/mounting: (HxWxD) 85(45) x 105 x 60mm  
DIN rail mounting  
Available application: SC111048EC: 8 x Open Loop Sensor | 111 048 C |

| clima RAE16 LON analogue input 16 ports | - Module with 16 independent channels for current or voltage measurement  
- Input signal separately selectable for each input channel: 0-10V, 2-10V, 0-20mA*, 4-20mA*  
- Application according to LonMark profile „Open Loop Sensor“ with modifiable network variables, supporting all scalar data types | Network: TP/FT-10 (FTT10)  
Power supply: 24V DC, max. 40mA  
Inputs: resolution: 10bit  
input resistance: 100kΩ  
Metrics/mounting: (HxWxD) 85(45) x 175 x 60mm  
DIN rail mounting  
Available application: SC111046EC: 16 x Open Loop Sensor | 111 046 C |
### LON in-wall analogue output

#### clima R1
**LON analogue output 2 ports**
- Flush mounting module with 2 independent analogue outputs on rear panel for actuators with 0-10V control signal (p. 75)
- Additional front connector for actuator clima A24S-10x (see below), in parallel with output 1 on the rear
- Rear outputs capable of connecting up to 5 actuators in parallel, e.g. via clima RA1 (see below)
- 2 inputs for floating contacts (e.g. window contacts)
- Used as intelligent actuator combined with e.control room control panels with internal temperature controller
- Suitable for all German telephone socket outlets (TAE)

#### clima RA1
**Slave actuator outlet**
- Slave outlet to connect one clima A24S-10x to analogue output clima R1 (see above)
- Front panel connector for actuator clima A24S-10x (see below)
- Loop-through connection for local window contact

#### clima A24S-10x
**Analogue thermoelectric actuator**
- Noiseless thermoelectric actuator with analogue signal input with jack for clima R1 and RA1
- Continuous positioning via 0-10V signal, closed when de-energised
- Optical function indicator
- Compatible with all common valve types due to adapter concept (p. 75)

#### Technical data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Network</th>
<th>Power supply</th>
<th>Rear panel terminals</th>
<th>Front panel connector</th>
<th>Metrics/mounting</th>
<th>Available Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>clima R1</td>
<td>TP/FT-10 (FTT10)</td>
<td>24V AC/DC, max. 35mA</td>
<td>2 inputs for floating contacts</td>
<td>1 input jack for clima A24S-10x</td>
<td>(HxWxD) 70 x 70 x 49mm</td>
<td>SC221341EC: 2 x Damper Actuator 2 x Binary Input</td>
</tr>
<tr>
<td>clima RA1</td>
<td>Power supply 24V AC or DC</td>
<td>24V AC/DC, max. 10mA</td>
<td>- Power supply 24V AC or DC - Control signal input from clima R1 - Window contact</td>
<td></td>
<td>(HxWxD) 70 x 70 x 20mm</td>
<td>in cavity wall or flush mounting sockets</td>
</tr>
</tbody>
</table>
| clima A24S-10x| Operating voltage / current: 24V AC or DC (depends on model) typ. 80mA, < 250mA on power-up | Positioning: travel: 4mm force: 100N drive time: 120s | Metrics: Travel: 4mm Force: 100N Drive time: 120s | (HxWxD) 55 x 44 x 64mm | 61

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*spelsberg gebäudeautomation gmbh + co. kg • zechenstr. 70 • 47443 moers • germany • fon +49 (2841) 88049-0 • fax +49 (2841) 88049-49 • info@spega.com • http://www.spega.com*
**LON M series - the modular concept**

**Modular e.control system cabinets**

Prefabricated system cabinets and spega’s M series: it couldn’t be better!

There are definite advantages to the security of scheduled delivery of prefabricated and tested system cabinets combined with rapid on-site installation and faultless connection of field equipment. Since no building project is the same as the next, it is absolutely essential for the installed actuators to be variable. This is where the M series of spega gets full points. Up to 16 random actuator channels can be operated on a LON universal controller sistema MC16 and, thanks to the application-specific dimensioned outputs, without any gain links or coupling relays. Compared with conventional solutions, this saves 50% in terms of space and wiring.

In addition to the extensive actuator range of the M series (see pp. 64-67), spega’s modular system also includes two types of ready-to-use metal-enclosed distribution boxes:

- System cabinet for “gesis” connectors
- System cabinet for “X-Com” terminals

**e.control system cabinet „gesis“**

A special feature of the gesis system cabinet is their extremely short and faultless installation and connection time on site. Here it is not even necessary to open the metal casing. The gesis cabinets thus have clearly defined guarantee limits at the connectors.

The system cabinets are as a rule available in two optimised sizes for decentralised room automation concepts. Both additionally have space for a 24V transformer for supplying actuators or motors (see p. 63) and for the sistema SV10-24 DC system supply (see p. 63), which supplies not only the installed LON devices but also additional LON control devices and multisensors which are connected to the system cabinet.

**e.control system cabinet „X-Com“**

X-Com system cabinets require less coordination effort since coordination via plug types is not required. They are therefore suitable also for smaller building projects in which the planning effort involved for gesis system cabinets would be inappropriate. A wide cable-entry opening with foam sealing facilitates the entry of the cables with the connected X-com plug (see small illustration).

X-Com system cabinets are likewise normally available in two sizes. They also have space for a transformer and the DC system supply. External LON devices can thus be connected by means of additional terminals and also supplied.

Unlimited variety: random combinations of up to 16 I/O ports per universal controller
# LON M series - system cabinets

<table>
<thead>
<tr>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System cabinet „gesis“</strong></td>
<td><strong>Material/protection:</strong> sheet steel 1mm zinc plated, IP40</td>
<td>SYS-G1, SYS-G2</td>
</tr>
<tr>
<td></td>
<td><strong>Plug system:</strong> Wieland gesis, 2-5 pole</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Power supply:</strong> 24V DC via external supply unit or 230V AC via toroid transformer and DC system supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Metrics (HxWxD):</strong> type G1: 80 x 600 x 300mm type G2: 80 x 900 x 300mm other sizes on request</td>
<td></td>
</tr>
<tr>
<td><strong>System cabinet „X-COM“</strong></td>
<td><strong>Material/protection:</strong> sheet steel 1mm zinc plated, IP40</td>
<td>SYS-X1, SYS-X2</td>
</tr>
<tr>
<td></td>
<td><strong>Terminal block system:</strong> Wago X-COM</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Power supply:</strong> 24V DC via external supply unit or 230V AC via toroid transformer and DC system supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Metrics (HxWxD):</strong> type G1: 80 x 600 x 450mm type G2: 80 x 900 x 450mm other sizes on request</td>
<td></td>
</tr>
<tr>
<td><strong>sistema RKT Toroidal transformer 230V / 24V AC</strong></td>
<td><strong>RKT60</strong> power 60 VA <strong>RKT100</strong> power 100 VA <strong>RKT160</strong> power 160 VA</td>
<td>SYS-RT6, SYS-RT10, SYS-RT16</td>
</tr>
<tr>
<td></td>
<td><strong>Voltage:</strong> primary 230V AC, 50/60Hz secondary 24V AC, 50/60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Metrics (HxD)/weight:</strong> RT60: 37 x 92 mm, 0.9 kg RT100: 45 x 95 mm, 1.2 kg RT160: 47 x 122 mm, 2.0 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Mounting:</strong> DIN rail mounting</td>
<td></td>
</tr>
<tr>
<td><strong>sistema SV10-24 DC system supply</strong></td>
<td><strong>Voltage:</strong> primary 24V AC, 50/60Hz secondary 24V DC</td>
<td>100 100</td>
</tr>
<tr>
<td></td>
<td><strong>Power:</strong> 25 W (1.0A secondary)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Metrics:</strong> (HxWxD) 90 x 35 x 55mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Mounting:</strong> DIN rail mounting</td>
<td></td>
</tr>
</tbody>
</table>
## LON M series - lighting and sunblind actuators

### Controller

<table>
<thead>
<tr>
<th>Actuator modules</th>
<th>lumina SA4</th>
<th>lumina SA8</th>
<th>lumina ST4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>sistema MC16</strong></td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>

- **LON universal controller** for modular actuators for connecting M series modules with up to 16 I/O's

### Order No.

<table>
<thead>
<tr>
<th>Actuator type (symbol)</th>
<th>121 000 C</th>
<th>120 104 (w/o op.)</th>
<th>120 105 (with op.)</th>
<th>120 108 (w/o op.)</th>
<th>120 109 (with op.)</th>
<th>120 144 (w/o op.)</th>
<th>120 145 (with op.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Controller</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Actuator modules</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Actuator type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Parameterisable via LNS plug-in

- ![Image](image4.png)

### Network type / transceiver

- TP/FT-10
- FTT10

### Supply voltage

- 24 V DC
- 20mA (max.)

### Current consumption

- 10mA (max.)

### Metrics (HxWxD)

- 85(45) x 35 x 60mm
- 2 pitch

### Compatibility

- Controller: supported I/O ports
- Actuators: claimed I/O ports

### Output ports

- **Relay output 230VAC**
- **4**
- **8**
- **4**

### Control output 1-10V (current sink)

- **4 (16A)**
- **8 (10A)**
- **4 (10A)**

### DALI groups (max. number of devices)

- 4

### Sunblind motor 230V AC

### Sunblind motor 24V DC

### Sunblind motor 230V AC/DMI

---

**Control output 4 x 1-10V**

- 4 relays, suitable for electronic ballasts for fluorescent lamps
### e.control products modular m series

<table>
<thead>
<tr>
<th>lumina DAL8</th>
<th>ombra BA2</th>
<th>ombra BA4</th>
<th>ombra BA4-DC</th>
<th>ombra BA4-DMI</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="image" /></td>
<td><img src="image2" alt="image" /></td>
<td><img src="image3" alt="image" /></td>
<td><img src="image4" alt="image" /></td>
<td><img src="image5" alt="image" /></td>
</tr>
<tr>
<td>DALI controller 8 groups</td>
<td>Sunblind act. 2 x 230VAC</td>
<td>Sunblind act. 4 x 230VAC</td>
<td>Sunblind act. 4 x 24V DC</td>
<td>Sunblind act. 4 x DMI</td>
</tr>
<tr>
<td>- 2 x 2 relays with interlocking contacts, optional with hand operation</td>
<td>- 4 x 2 relays with interlocking contacts, optional with hand operation</td>
<td>- with pole-reversing output for 4 DC motors, optional with hand operation</td>
<td>- for 4 groups of digital sunblind motors with DMI interface and 230V supply</td>
<td></td>
</tr>
<tr>
<td>120 168</td>
<td>120 202 (w/o op.)</td>
<td>120 204 (w/o op.)</td>
<td>120 214 (w/o op.)</td>
<td>120 218</td>
</tr>
<tr>
<td>120 203 (with op.)</td>
<td>120 205 (with op.)</td>
<td>120 215 (with op.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 pitch</td>
<td>4 pitch</td>
<td>4 pitch</td>
<td>3 pitch</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>via controller 100mA (max.)</td>
<td>via controller 40mA (max.)</td>
<td>via controller 80mA (max.)</td>
<td>via controller 80mA (max.)</td>
<td>via controller 5mA (max.)</td>
</tr>
<tr>
<td>85(45) x 70 x 60mm</td>
<td>85(45) x 35 x 60mm</td>
<td>85(45) x 70 x 60mm</td>
<td>85(45) x 70 x 60mm</td>
<td>85(45) x 53 x 60mm</td>
</tr>
<tr>
<td>4 pitch</td>
<td>2 pitch</td>
<td>4 pitch</td>
<td>4 pitch</td>
<td>3 pitch</td>
</tr>
<tr>
<td>4 / 8 (max. 64 DALI devices)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (6A)</td>
<td>4 (8A)</td>
<td></td>
<td>4 (140W)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(max 4 motors per output)</td>
<td></td>
</tr>
</tbody>
</table>
## LON M series - digital and analogue input and output modules

### Controller
- **sistema MC16**
- **Input module**
  - Lumina BE8
- **Output modules**
  - Clima AA4
  - Clima AA8

### Controller: supported I/O ports
- **16**

### Compatibility (see also previous pages)
- **Controller:**
  - **Input ports:**
    - **Digital, floating contact**
    - NO / NC
    - **8**
  - **Output ports:**
    - **4**
    - **8**

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Actuator type (symbol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>121 000 C</td>
<td>2-P/3-P M</td>
</tr>
<tr>
<td>110 008</td>
<td>2-P/3-P M</td>
</tr>
<tr>
<td>120 324</td>
<td>2-P/3-P M</td>
</tr>
<tr>
<td>120 328</td>
<td>2-P/3-P M</td>
</tr>
</tbody>
</table>

### Actuator type (symbol)
- 2-P/3-P M

### Parameterisable via LNS plug-in
- NO / NC

### Network type / transceiver
- TP/FT-10
- FTT10

### Supply voltage
- 24 V DC
- 20mA (max.)

### Current consumption
- via controller
- 40mA
- via controller
- 5mA
- via controller
- 5mA

### Metrics (HxWxD)
- 85(45) x 35 x 60mm
- 2 pitch
- 85(45) x 70 x 60mm
- 4 pitch
- 85(45) x 53 x 60mm
- 3 pitch
- 85(45) x 70 x 60mm
- 4 pitch

### Compatibility
- **Actuators:**
  - Claimed I/O ports
  - **4**
  - **8**

### Output ports (type and quantity)
- **4** (750mA)
- **8** (500mA)
- **2** (750mA)
- **4** (500mA)
### Modular M Series

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clima AA4-10V</td>
<td>Analogue output 4 port for 4 groups of continuous actuators with 0-10V or 4-20mA signal input</td>
<td>80mA, 85(45) x 53 x 60mm 3 pitch, 4 (20mA)</td>
</tr>
<tr>
<td>Clima AA8-10V</td>
<td>Analogue output 8 port for 8 groups of continuous actuators with 0-10V or 4-20mA signal input</td>
<td>160mA, 85(45) x 70 x 60mm 4 pitch, 8 (20mA)</td>
</tr>
<tr>
<td>Clima LA2-2</td>
<td>Multi-stage switch 230V 2 x 2 or 1 x 4 stages for two 2-speed or one 3- or 4-speed fan</td>
<td>40mA (max.), 85(45) x 35 x 60mm 2 pitch, 1 (6A), 2 (8A)</td>
</tr>
<tr>
<td>Clima LA4-2</td>
<td>Multi-stage switch 230V 4 x 2 or 2 x 4 stages for four 2-speed or two 3- or 4-speed fan</td>
<td>80mA (max.), 85(45) x 70 x 60mm 4 pitch, 4 (8A)</td>
</tr>
</tbody>
</table>
## LON FastCon lighting actuators

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
</table>
| ![Lumina FSA4](image1) | **Lumina FSA4**  
LON switch actuator 4 ports  
- Ready-to-use relay module in sheet steel cabinet with gesis plug-and-socket connectors for independent switching of 4 electric loads  
- High-current relay contacts (120A) for capacitive lamp loads:  
  - Incandescent lamps: 2000W  
  - Halogen lamps: 1700W  
  - Fluorescent lamps: 1000W comp.  
- Stairway lighting, switch-on/off delay and scene memory  
| **Network:**  
TP/FT-10 (FTT-10)  
**Power supply:**  
230V AC, max. 16A  
**Metrics/mounting:**  
(HxWxD) 70 x 292 x 77mm mounting in false floor, suspended ceiling or on cable route  
**Available application:**  
SC121104EC: 4 x Lamp Actuator  
3 x Lamp Group Ctrl.  | 321 104 C |
| ![Lumina FSA4](image2) | **Lumina FSA4**  
LON switch actuator 8 ports  
- Ready-to-use relay module in sheet steel cabinet with gesis plug-and-socket connectors for independent switching of 8 electric loads  
- High-current relay contacts (120A) for capacitive lamp loads:  
  - Incandescent lamps: 2000W  
  - Halogen lamps: 1700W  
  - Fluorescent lamps: 1000W comp.  
- Stairway lighting, switch-on/off delay and scene memory  
| **Network/power supply:**  
- type: TP/FT-10 (FTT-10)  
- Voltage: 230V AC, 16A (3 x 16A)  
**Metrics/mounting:**  
(HxWxD) 70 x 292 x 77mm mounting in false floor, suspended ceiling or on cable route  
**Available application:**  
SC121108EC: 8 x Lamp Actuator  
3 x Lamp Group Ctrl.  | 321 108 C | 321 109 C |
| ![Lumina FST4](image3) | **Lumina FST4**  
LON control output 1-10V, 4 ports  
- Ready-to-use relay module in sheet steel cabinet with gesis plug-and-socket connectors for independent switching and dimming of 4 groups of electronic ballasts with 1-10V  
- Relays with high current contacts (120A) for fluorescent lamps up to 1500W (comp.)  
- Stairway lighting, switch-on/off delay and scene memory with 10 scenes per channel  
| **Network/power supply:**  
- type: TP/FT-10 (FTT-10)  
- Voltage: 230V AC, max. 16A  
**Load of control outputs:**  
- max. 40mA (current-sinking)  
**Metrics/mounting:**  
(HxWxD) 70 x 292 x 77mm mounting in false floor, suspended ceiling or on cable route  
**Available application:**  
SC121144EC: 4 x Lamp Actuator  
3 x Lamp Group Ctrl.  | 321 144 C |
| ![Lumina FST8](image4) | **Lumina FST8**  
LON control output 1-10V, 8 ports  
- Ready-to-use relay module in sheet steel cabinet with gesis plug-and-socket connectors for independent switching and dimming of 8 groups of electronic ballasts with 1-10V  
- Relays with high current contacts (120A) for fluorescent lamps up to 1500W (comp.)  
- Stairway lighting, switch-on/off delay and scene memory with 10 scenes per channel  
| **Network/power supply:**  
- type: TP/FT-10 (FTT-10)  
- Voltage: 230V AC, max. 16A  
**Load of control outputs:**  
- max. 40mA (current-sinking)  
**Metrics/mounting:**  
(HxWxD) 70 x 432 x 77mm mounting as above  
**Available application:**  
SC121148EC: 8 x Lamp Actuator  
3 x Lamp Group Ctrl.  | 321 148 C | 321 149 C |
## LON FastCon sunblind actuators

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Image" /></td>
<td><strong>ombra FBA4</strong>&lt;br&gt;LON Sunblind actuator 4 ports</td>
<td>Network: TP/FT-10 (FTT-10)</td>
<td>321 204 C</td>
</tr>
<tr>
<td></td>
<td>- Ready-to-use relay module in sheet steel cabinet with gesis plug-and-socket connectors for 4 AC motors for sunblinds, shutters or windows</td>
<td>Power supply: 230V AC, max. 16A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Appropriate to sun tracking and calc. of shading factors (p. 74)</td>
<td>Motor load (per output): max. 800VA, with micro-fuse 6.3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel</td>
<td>Metrics/mounting: (HxWxD) 70 x 292 x 77mm, mounting in false floor, susp. ceiling or cable route</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Available application:</strong>&lt;br&gt;SC121204EC: 4 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Image" /></td>
<td><strong>ombra FBA8</strong>&lt;br&gt;LON Sunblind actuator 8 ports</td>
<td>Network: TP/FT-10 (FTT-10)</td>
<td>321 208 C</td>
</tr>
<tr>
<td></td>
<td>- Ready-to-use relay module in sheet steel cabinet with gesis plug-and-socket connectors for 8 AC motors for sunblinds, shutters or windows</td>
<td>Power supply: 230V AC, 16A (3 x 16A)</td>
<td>321 209 C</td>
</tr>
<tr>
<td></td>
<td>- Appropriate to sun tracking and calc. of shading factors (p. 74)</td>
<td>Motor load (per output): max. 800VA, with micro-fuse 6.3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Parameterisable power-on and weather protection behaviour, scene memory for 10 positions including slat angle per channel</td>
<td>Metrics: (HxWxD) 70 x 432 x 77mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Available application:</strong>&lt;br&gt;SC121208EC: 8 x Sunblind Actuator 3 x Sunbl. Group Ctrl.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## LON FastCon combined actuators

### Figure

#### lumina FBSA44
LON Combined actuator 4S-4MSE
- Ready-to-use relay module in sheet steel cabinet with gesis plug-and-socket connectors for independent switching of 4 electric loads and 4 AC motors for sunblinds, shutters or windows
- High current contacts (120A) suitable for fluorescent lamps
- Appropriate to sun tracking and calc. of shading factors (p. 74)
- Switch outputs with stairway lighting and switch-on/off delay; motor outputs with parameterisable power-on and weather protection behaviour

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Technical data</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>321 534 C</td>
<td>FBSA44 1-phase supply</td>
<td>lumina FBSA44</td>
</tr>
<tr>
<td>321 535 C</td>
<td>FBSA44-5 3-phase supply</td>
<td>LON Combined actuator 4S-4MSE</td>
</tr>
</tbody>
</table>

- Network: TP/FT-10 (FTT-10)
- Power supply: 230V AC, max. 16A (3 x 16A)
- Lamp load (per phase): incandescent lamps: 3000W halogen lamps: 2500W fluorescent lamps: 1500W (comp.)
- Motor load (per output): max. 800VA, with micro-fuse 6,3A
- Metrics/mounting: (HxWxD) 70 x 432 x 77mm mounting in false floor, suspended ceiling or on cable route
- Available application: SC121534EC: 4 x Lamp Actuator 4 x Sunblind Actuator 2 x Lamp Group Ctrl. 3 x Sunbl. Group Ctrl.

#### lumina FBST44
LON Combined actuator 4S-4MSE
- Ready-to-use relay module in sheet steel cabinet with gesis plug-and-socket connectors for switching and dimming 4 groups of electronic ballasts with 1-10V interface and for controlling 4 AC motors for sunblinds, shutters or windows
- High current contacts (120A) suitable for fluorescent lamps
- Appropriate to sun tracking and calc. of shading factors (p. 74)
- Control outputs with stairway lighting, switch-on/off delay and variable dimming ramp; motor outputs with parameterisable power-on and weather protection behaviour

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Technical data</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>321 544 C</td>
<td>FBST4 3-pole supply</td>
<td>lumina FBST44</td>
</tr>
<tr>
<td>321 545 C</td>
<td>FBST44-5 5-pole supply</td>
<td>LON Combined actuator 4S-4MSE</td>
</tr>
</tbody>
</table>

- Network: TP/FT-10 (FTT-10)
- Power supply: 230V AC, max. 16A (3 x 16A)
- Lamp load (per phase): fluorescent lamps: 1500W (comp.)
- Motor load (per output): max. 800VA, with micro-fuse 6,3A
- Metrics/mounting: (HxWxD) 70 x 432 x 77mm mounting in false floor, suspended ceiling or on cable route
- Available application: SC121544EC: 4 x Lamp Actuator 4 x Sunblind Actuator 2 x Lamp Group Ctrl. 3 x Sunbl. Group Ctrl.
# LON fire and smoke damper modules

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Technical data</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="clima BSK8-E" /></td>
<td><strong>clima BSK8-E</strong>&lt;br&gt;LON fire damper position indicator&lt;br&gt;- Module with 8 inputs for position indicator switches of up to 8 fire dampers&lt;br&gt;- Plastic case, cable entry points with strain relief, protection class IP54 (IP65 on request)&lt;br&gt;- External 24V power supply via bus cable&lt;br&gt;- Applications according to LonMark to initiate and forward fire alarms or to monitor states of binary contacts&lt;br&gt;&lt;br&gt;<strong>Network:</strong> TP/FT-10 (FTT-10)&lt;br&gt;<strong>Power supply:</strong> 24V AC/DC, max. 50mA&lt;br&gt;<strong>Metrics:</strong> (HxWxD) 63 x 254 x 180mm&lt;br&gt;<strong>Available applications:</strong> SC411408EC 8 x Fire Smoke Damper Actuator SC411008EC 8 x Switch</td>
<td><strong>Order No.</strong></td>
<td>411 408 C</td>
</tr>
<tr>
<td><img src="image2" alt="clima BSK4-E230" /></td>
<td><strong>clima BSK4-E230</strong>&lt;br&gt;LON fire damper position indicator&lt;br&gt;- Module with 8 inputs for position indicator switches of up to 8 fire dampers&lt;br&gt;- Plastic case, cable entry points with strain relief, protection class IP54 (IP65 on request)&lt;br&gt;- Integrated 230V power supply&lt;br&gt;- Applications according to LonMark to initiate and forward fire alarms or to monitor states of binary contacts&lt;br&gt;&lt;br&gt;<strong>Network:</strong> TP/FT-10 (FTT-10)&lt;br&gt;<strong>Power supply:</strong> 230V AC, max. 2VA&lt;br&gt;<strong>Metrics:</strong> (HxWxD) 63 x 254 x 180mm&lt;br&gt;<strong>Available applications:</strong> SC411408EC 8 x Fire Smoke Damper Actuator SC411008EC 8 x Switch</td>
<td></td>
<td>411 409 C</td>
</tr>
<tr>
<td><img src="image3" alt="clima BSK4-F" /></td>
<td><strong>clima BSK4-F</strong>&lt;br&gt;LON fire damper actuator 4 ports&lt;br&gt;- Module to control 4 fire or smoke dampers with 24V AC/DC spring return drive&lt;br&gt;- 8 inputs for floating contacts to indicate open-end and closed-end position&lt;br&gt;- 24V power supply via bus cable&lt;br&gt;- Application according to LonMark profile „Fire Smoke Damper Act.”&lt;br&gt;&lt;br&gt;<strong>Network:</strong> TP/FT-10 (FTT-10)&lt;br&gt;<strong>Power supply:</strong> 24V DC, max. 120mA&lt;br&gt;<strong>Max. load (per relay):</strong> 24V AC/DC, 3A&lt;br&gt;<strong>Metrics:</strong> (HxWxD) 63 x 254 x 180mm&lt;br&gt;<strong>Available application:</strong> SC421404EC 4 x Fire Smoke Damper Actuator</td>
<td></td>
<td>421 404 C</td>
</tr>
<tr>
<td><img src="image4" alt="clima BSK4-F230" /></td>
<td><strong>clima BSK4-F230</strong>&lt;br&gt;LON fire damper actuator 4 ports&lt;br&gt;- Module to control 4 fire or smoke dampers with 230V AC spring return drive&lt;br&gt;- 8 inputs for floating contacts to indicate open-end and closed-end position&lt;br&gt;- Integrated 230V power supply&lt;br&gt;- Application according to LonMark profile „Fire Smoke Damper Act.”&lt;br&gt;&lt;br&gt;<strong>Network:</strong> TP/FT-10 (FTT-10)&lt;br&gt;<strong>Power supply:</strong> 230V AC, max. 4VA&lt;br&gt;<strong>Max. load (per relay):</strong> 230V AC, 3A&lt;br&gt;<strong>Metrics:</strong> (HxWxD) 63 x 254 x 180mm&lt;br&gt;<strong>Available application:</strong> SC421404EC 4 x Fire Smoke Damper Actuator</td>
<td></td>
<td>421 405 C</td>
</tr>
</tbody>
</table>
### LON compact weather sensor

**Figure** | **Specification** | **Technical data** | **Order No.**
--- | --- | --- | ---
ombra W2 | LON compact weather sensor  
- Compact device for daylight and temperature-dependent controls  
- Integrated light and temperature sensor  
- With terminal for wind speed sensor ombra W1-Wh or rain sensor ombra W1-R  
- Safety class IP54, weatherproof, mounting angle enclosed  | Network/power supply:  
- type: TP/FT-10 (FTT10)  
- voltage: 24V DC, max. 20mA  | 411 202 C

**Power supply:**  
24V AC/DC, max. 100mA

**Measurement signal:**  
- pulse, reed contact  
- 0.5...40 m/s

**Metrics/mounting:**  
(HxWxD) 93 x 72 x 57mm  
pole- or wall-mounting

Available application:  
SC411202EC:  
1 x Light Sensor  
1 x Temperature Sensor  
1 x Air Velocity Sensor  
1 x Rain Sensor  
1 x Weather Prot. Ctrl.  
2 x Sun Controller  
2 x Level Switch Ctrl.

ombra W1-Wh | Wind speed sensor for ombra W2  
- Compact sensor for vectorial wind speed measurement  
- Connectable to compact weather sensor ombra W2  
- Integrated automatic heating for ice free usage up to -30°C  
- Safety class IP54, weatherproof, mounting angle enclosed  | Power supply:  
24V AC/DC, max. 150mA  | 410 202

**Measurement signal:**  
- binary, floating contact  
- (HxWxD) 18 x 76,5 x 54mm  
- pole- or wall-mounting

ombra W1-R | Rain sensor for ombra W2  
- Compact sensor for rain and snow detection  
- Connectable to compact weather sensor ombra W2 or to any binary input (e.g. lumina T6/B8)  
- Integrated automatic heating for ice free usage up to -30°C  
- Safety class IP54, weatherproof, mounting angle enclosed  | Power supply:  
24V AC/DC, max. 150mA  | 410 203

**Measurement signal:**  
- binary, floating contact  
- (HxWxD) 18 x 76,5 x 54mm  
- pole- or wall-mounting

ombra W1-K | Terminal box for ombra W2  
- For wiring wind speed sensor or rain sensor to compact weather sensor ombra W2  
- With terminal block for power supply, LON bus and sensor signal  
- Safety class IP65, weatherproof  | Material:  
- polycarbonate  | 950 201

**Accessories:**  
- 8 terminal blocks 2,5mm  
- 3 screwed cable glands IP65  
- (HxWxD) 140 x 140 x 80mm
## LON weather station

### Specification

**ombra W8**
- LON sensor unit for 8 sensors
- Module for collecting and processing of all weather data from combined sensor ombra W7-C and wind direction sensor ombra W1-D
- 8 analogue inputs 0-10V
- Integrated weather protection controllers for 4 facades

### Technical data

- **Order No.:** 111 288 C
- **Network/power supply:**
  - **type:** TP/FT-10 (FTT10)
  - **voltage:** 24V DC, max. 30mA
- **Metrics/mounting:**
  - **Available application:** SC111288EC: 3 x Light Sensor, 1 x Temperature Sensor, 1 x Humidity Sensor, 1 x Air Velocity Sensor, 1 x Wind Direction Sens., 1 x Rain Sensor, 4 x Weather Prot. Ctrl.

---

### Figure

![LON weather station](image)

---

### Technical data

- **Order No.:** 410 207
- **Power supply:**
  - **24V AC/DC, max. 100mA**
- **Metering range/accuracy:**
  - **wind:** 1...40m/s / 0.5m/s
  - **rain:** yes/no / 1bit
  - **luminance:** 0...110kLx / 10%
  - **temperature:** -20...60°C / 0.2°C
  - **humidity:** 0...100% (re.) / 3%
- **Metrics/mounting:**
  - **Available application:** (HxØ) 430 x 130 mm
  - Pole- or wall-mounting

---

### Figure

![ombra W7-C](image)

---

### Technical data

- **Order No.:** 410 204
- **Power supply:**
  - **24V AC/DC, max. 800mA**
- **Metering range/accuracy:**
  - **direction:** 0...360° / 5°
- **Metrics/mounting:**
  - **Available application:** (HxØ) 220 x 50 mm
  - Length of vane 165 mm
  - Pole- or wall-mounting

---

### Figure

![ombra W1-D](image)

---

### Technical data

- **Order No.:** 950 205
- **Material:** polycarbonate
- **Accessories:**
  - 1 power supply 24V DC, 1.3A
  - 4 terminal blocks 2.5mm
  - 4 screwed cable glands IP65
- **Metrics/mounting:**
  - (HxWxD) 254x180x90mm

---

### Figure

![ombra W1-G](image)
LON sun tracking and application controllers

**ombra BST**
LON sun tracking controller

- Sun position-dependent positioning of slat angles for up to 15 facades or venetian blind types
- Supports e.control calculation of shading factors on all e.control sunblind actuators
- Works together with all e.control sunblind actuators
- Integrated processing of telegrams from multiple light sensors (e.g. ombra W8 or ombra W2)
- Anti-glare or daylight guidance strategy independently selectable for each group of venetian blinds
- Manual positioning of facade groups via user menu
- Integrated time clock for time-dependent positioning commands
- Password protected user access
- Comprehensive plug-in for step-by-step parameterisation

**Available application:**
SC341298EC: 1 x Real Time Clock
1 x Sun Position Sensor
15 x Sun Tracking Ctrl.
5 x Facade Group Ctrl.

**Technical data**
- **Order No.:** 341 298 C
- **Network:** TP/FT-10 (FTT10)
- **Power supply:** 24V DC, max. 80mA
- **Equipment:**
  - - display 4x16 characters, backlit
  - - real-time clock, battery backed
  - - 3 LED's (red, yellow, green)
- **Metrics/mounting:**
  - (HxWxD) 125 x 125 x 40mm
  - includes box for cavity wall or flush-mounting or mounting in distribution boards

**sistema RC2**
LON application controller

- Compact device for different control applications or logic processes
- Various software applications available on CD or on request (e.g. scene controller, logic functions, constant light controller, room temperature controller, partition wall controller)

**Available applications:**
131020PW: 8 x Partition Wall Ctrl.
131020LG: 20 x Logic Controller
131020SC: 16 x Scene Controller etc...

**Technical data**
- **Order No.:** 131 020 C
- **Network:** TP/FT-10 (FTT10)
- **Power supply:** 24V DC, max. 20mA
- **Metrics/mounting:**
  - (HxWxD) 85(45) x 35 x 60mm
  - DIN rail mounting

**Available applications:**
131020PW: 8 x Partition Wall Ctrl.
131020LG: 20 x Logic Controller
131020SC: 16 x Scene Controller etc...
## Accessories

<table>
<thead>
<tr>
<th>Figure</th>
<th>Specification</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>clima A24-T</strong> Thermostatic actuator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating voltage / current: 24V AC/DC typ. 80mA, &lt; 250mA on power-on</td>
<td>020 325</td>
</tr>
<tr>
<td></td>
<td>Travel / force / time / cable length: 4mm / 100N / 120s / 1.0m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applicable for all common valve types</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Noiseless thermostatic actuator with optical function indicator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clip-in mounting of actuator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Closed when de-energised</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>clima A24-10xx</strong> Analogue thermostatic actuator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating current: typ. 80mA, &lt; 250mA on power-on</td>
<td>020 345</td>
</tr>
<tr>
<td></td>
<td>Travel / force / time / cable length: 4mm / 100N / 120s / 1.0m</td>
<td>020 346</td>
</tr>
<tr>
<td></td>
<td>Applicable for all common valve types</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Noiseless continuous actuator with optical function indicator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuous positioning via 0-10V signal, closed when de-energised</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Valve adaptor for clima A24-x</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connects push button switches to e.control flush mounting devices</td>
<td>VA 78</td>
</tr>
<tr>
<td></td>
<td>Contents 50 cables, length 40cm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sorted by colors</td>
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<td></td>
<td><strong>Mounting kit for dialog 1 (replacement)</strong></td>
<td>940 001</td>
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<td></td>
<td>Connects push button switches to e.control flush mounting devices</td>
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<td></td>
<td>Contents 50 cables, length 40cm</td>
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<td>Sorted by colors</td>
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<td></td>
<td><strong>Cable loom for push buttons</strong></td>
<td>910 050</td>
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<td></td>
<td>Connects push button switches to e.control flush mounting devices</td>
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<td></td>
<td>Contents 50 cables, length 40cm</td>
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<td>Sorted by colors</td>
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<tr>
<td></td>
<td><strong>LON micro push-wire connectors</strong></td>
<td>908 022</td>
</tr>
<tr>
<td></td>
<td>Replacement for lost connectors or applicable as branch joint for bus lines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contents 20 pcs in red/black 20 pcs in white/yellow</td>
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<tr>
<td></td>
<td><strong>Screws 25 mm</strong></td>
<td>980 025</td>
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<tr>
<td></td>
<td>Fixes flush mounting devices on cavity wall or flush mounting sockets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contents 200 pcs</td>
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1. The following terms and conditions of sale and delivery of Speeg GmbH & Co. KG (hereinafter referred to as: spega) apply to all sales of goods, regardless of whether the goods are delivered within the framework of a one-off transaction or as part of a series of transactions, to be settled at the latest within three weeks. If no agreement to the contrary has been made between the legal representatives of the parties, the conditions of sale of Speeg GmbH & Co. KG apply. The Confederation and subsequent modifications are binding for offers only after written confirmation by spega. The employees of spega are not authorized to make any agreements that deviate from these General Terms and Conditions.

2. Any conditions of purchase of the ordering party shall be binding only after the express agreement of an order writing.

3. § 2 Offers and scope of supply

1. The offers of spega shall always be subject to change and not binding. The offered price shall be calculated on the basis of the prices of materials and exclude packaging and insurance. Bank, discount and debiting charges shall be borne by the ordering party.

2. The prices which belong to spega's offers such as figures, drawings, descriptions and measurement specifications only identify the subject matter of the contract and do not constitute an assurance of the properties and features of the contractual item. They contain only approximate information within the scope of the customary commercial tolerance values.

3. spega retain the right of ownership and copyright with regard to drawings and other documents. These drawings and documents may not be made available to third parties and are to be returned forthwith to spega upon request or in the event of the order being abandoned, without being damaged.

4. For the scope of supply, the written order acknowledgement of spega is decisive. Protective devices shall be part of the delivery if and insofar as this has been expressly agreed upon.

5. spega reserve the right to make modifications to the delivery item if this does not impair the usability of the items for the purpose agreed upon, and if the agreed cost effectiveness is not modified to the customer's detriment. Technical improvements are always permitted.

4. § 3 Prices and payments

1. All prices are net prices. Discounts shall not be granted unless otherwise agreed upon. The prices shall apply “ex works” (spega’s sales office), exclusive of all taxes and insurances. Bank, discount and debiting charges shall be borne by the ordering party.

2. The prices shall be calculated on the basis of the prices of materials and exclude packaging and insurance. spega's sales office is not responsible for the cost of transportation and insurance, unless this has been expressly agreed upon.

3. In the event of any alteration to the contract, payment shall be made in cash without any dispositions required by Office of the State (office of the State), in addition to complete fulfillment of all claims which spega is entitled to from his or her other orders by the ordering party.

4. To request payment of security, spega reserve the right to assert any damage that goes beyond the amount mentioned.

5. The assertion of rights of retention on set-off or set-off as well as the plea of non-payment from the customer is not permissible vis-a-vis spega’s offers such as figures, drawings, descriptions and measurement specifications only identify the subject matter of the contract and do not constitute an assurance of the properties and features of the contractual item. They contain only approximate information within the scope of the customary commercial tolerance values.

6. in the event of cancellation of orders, the agreed price shall be due and payable with immediate effect. However, the costs which have saved for the partial work still to be performed up until the completion of the order must be excluded. As a result, the ordering party has the right to assert damages vis-a-vis the ordering party is required to pay for the work already done.

7. Deadlines begin with the sending of the order acknowledgement, however, not before provision of the final documents and/or approval to be procured by the ordering party at all technical issues as well as before the receipt of an agreed delivery. Delivery dates shall be deemed observed if the delivery item has left the point of dispatch at spega's time by the time they expire without notice of readiness for dispatch has been submitted.

8. Delivery dates shall be fulfilled in accordance with the subject matter and in the event of occurrence of unforeseeable obstacles if these result in delays in the rendering of services which are not caused by spega or their suppliers or sub-suppliers.

9. In case of delay on the part of spega's, the obligation to make damages in case of slight negligence is not excluded. spega's claims for expenses may be accelerated due to lack of explicit assurance. Delivery shall, however, take place at the latest within 3 weeks of the specified delivery date subject to timely delivery.

10. Deliveries in bulk and in parts of the order may be delivered even before the order is completed, if no agreement to the contrary has been made between the legal representatives of the parties, the conditions of sale of Speeg GmbH & Co. KG apply. The Confederation and subsequent modifications are binding for offers only after written confirmation by spega. The employees of spega are not authorized to make any agreements that deviate from these General Terms and Conditions.

5. § 5 Transfer of risk

1. The risk is transferred to the ordering party the moment the delivery leaves the point of dispatch at spega or the moment it is made available to the ordering party through notification. Dispatch is carried out for account of the ordering party and at the latter's risk.

2. § 6 Partial deliveries

spega are entitled to effect partial deliveries and also premature deliveries after prior information.

§ 7 Reservation of ownership

1. The items delivered by spega remain the property of spega until payment of the purchase price including all incidental claims. Furthermore, spega reserve the right of ownership regarding these items up to the complete payment of all existing and future claims from the already existing business relationship or in the event of delayed payment, stoppage of payment or institution of a bankruptcy action against the contracting parties at their general venue.

2. In the event of default on the part of the ordering party, the ordering party has the right to rescind the contract. Damages do not exist unless this impossibility is caused by wilfulness or gross negligence on the part of spega, their representatives or agents. In case of slight negligence, the liability is limited to foreseeable, typical forms of damage insofar as not caused by wilfulness or gross negligence and as long as there is no liability for the injury to life, body or health of the customer. spega's compensation obligation shall be restricted to € 10,000.

3. In case of seizure or interventions on the part of third parties, the ordering party is to be seen as the main item, the ordering party shall proportionally transfer the debt to the ordering party.

4. In case of seizure or interventions on the part of third parties, the ordering party must inform spega forthwith in writing. The costs of intervention and re- possession shall be borne by the ordering party.

5. In case of neglectful behaviour on the part of the ordering party which is in breach of contract as well as in the event of justified claims regarding the observance of insolvency proceedings, spega have the right to assert a greater damage. This shall not be affected by downpayments and advance payments made by the ordering party.

6. The delivery items are to be treated carefully by the ordering party and must be handled with due care, however, the assignment charge must be borne by the ordering party.

7. The delivery items are to be treated carefully by the ordering party and must be insured by the latter at own expense against fire, water, explosion and other damage. spega shall be informed of the occurrence of any damage.

8. The ordering party is authorised to sell the goods in the course of a proper business transaction. If the ordering party disposes of the item which was covered by a reservation of ownership, it is, however, obliged to reserve such reservation of ownership. General terms and conditions, vis-a-vis third-party purchasers. The ordering party shall assign to spega the right for the period of the reservation of ownership, from now on up to its complete release from the risk of destruction, to the seller preceding from the sale, including all subsidiary rights, regardless of whether the item purchased has been re-sold or after processing. After processing the ordering party has the right to collect the entire amounts due. However, the assignee claim must be forwarded forthwith to spega. spega can notify third-party purchasers at any time of the assignment by means of an easy-to-read notification.

9. spega are entitled to revoke the authorisation for further disposal and collection with immediate effect if the ordering party does not fulfill all service obligations towards spega.

10. If the security rights granted to spega are to be released, the ordering party is obliged to notify spega of this fact in advance. spega shall, at the request of the ordering party, release the security rights in place, however, this must be to the amount of interest which the customer has in the performance of the contractual obligation.

11. Claims for compensation against spega are excluded. However, this does not affect § 12 or the right of the ordering party to terminate the contract.

12. Liability

In all cases of violation of contractual pre or post-contractual as well as statutory obligations, spega are liable only where such violation is caused by wilfulness or gross negligence. spega's compensation obligation is restricted to the amount of interest which the customer has in the performance of the contractual obligation.

13. Final provisions

1. In the event of a dispute between the business partners, claims shall be settled exclusively according to German law, with the exclusion of the standardized UN-CISG Convention and the Vienna Convention on the International Sale of Goods, CISG, even if the ordering party has its head office abroad or if the transaction in question is an export transaction.

2. Should the ordering party or because
Fax reply to +49 (2841) 88049-49

Company: __________________________________________
Name/Dep.: __________________________________________
Street: ______________________________________________
ZIP/City: ____________________________________________
Country: _____________________________________________
Phone: ___________________ Fax: _______________________
Email: ___________________ Internet: ____________________

We are:                      □ Planner for electrical or HVAC equipment
                               □ System integrator
                               □ Electrical installer
                               □ Technical contractor
                               □ Others: _____________________________

Please send us:              □ ___ exemplars of the e.control investor’s brochure
                               (as handout for our customers)
                               □ e.control CD with software and technical data sheets
                               □ e.control price list

We are interested in:        □ contacting our local spega distributor
                               □ distributing spega systems in our region

Our request to spega:        __________________________________________
                               __________________________________________
                               __________________________________________
                               __________________________________________