



Lighting perfectly balanced High quality presence detector with constant light control



Presence detectors are just a matter of course in buildings for years as light switches. The quality differences are however, tremendous. For the new construction of a representative and highly-functional building in Lüdenscheid, Germany, detectors were required that did not only offer versatile functions and a high degree of measuring accuracy, but also have an appealing exterior.

DIAL (Deutsches Institut Für Angewandte Lichttechnik GmbH) based in Lüdenscheid, Germany, was founded in 1989 and is a service centre for building technology and light. Its function is as a manufacturer-neutral mediator for innovation and knowledge, planner, service provider and software house. Their offers include seminars, planning/consultation, light measurements on lamps and lights as well as examinations and tests pertaining to EIB/KNX, DALI and BACnet in accredited laboratories. In 2012, DIAL in Lüdenscheid had erected a distinctive new constructions that had set benchmarks by the integral planning of the technical building equipment, the building system design.

Target

- Close interaction of light planning, architecture and light design
- Different lighting levels selectable
- Individual dimming
- Simulating a sunny day
- Control of heating and ventilation
- Detect reliably despite the relatively low height of the entire room
- Detectors must be integrated into the suspended lighting
- Simple design

Solution

- Control using the PlanoCentro KNX presence detector
- Fully or semi-automatic function
- Square detection area (10 m x 10 m at an installation height of 3.5 m)
- Constant light control
- Short presence with reduced run-on time
- HVAC channel with switch-on delay
- Networking via KNX (EIB), remote configuration via ETS
- Award-winning design



Light and transparent: the new construction from DIAL in Lüdenscheid, Germany

Due to the technical and design competence of DIAL, it was clear the planning for the building, building technology and lighting would be taken over under their own direction. Particular emphasis was placed on a close interaction of light planning, architecture and light design. DIAL was the leading hand for the construction until it was completed. About 2,000 m² useful area for office and conference rooms, laboratories as well as foyer, atrium, bistro and catering zone were created over three floors. The building has almost achieved the passive house standard so that it can do without conventional heaters as it only uses heat pumps. It goes without saying that DIAL wanted more than a faceless functional building. Moreover, one strived for a „good building“ as formulated by the deputy managing director, Dipl.-Ing. Dipl.-Wirt.-Ing. Andreas Bossow (graduate engineer/master of business and engineering). „A good building comprises a well considered interaction of architecture, technology, efficiency and individuality“, was his motto.

Summer days, even in November

Needless to say that DIAL had also placed respectively high demands on the lighting. But what does that mean specifically? Are the standards and guidelines for workplace lighting insufficient? A remark from Andreas Bossow: „Light is a source of nourishment for us. According to opinions from a growing number of experts, with regard to health aspects, 500 lux is not enough for office activities.“ He was addressing a long-familiar problem with this. Employees were constantly complaining about poor lighting - usually without success. Complaints were rejected by using a luxmeter on the work surface and by referring to the fulfillment of the standards. Andreas Bossow is a different opinion: „We do not want to fulfil

„We wanted devices with a high detection quality and wide detection area. The PlanoCentro from Theben was one of the best.“

Andreas Bossow
deputy managing director DIAL GmbH

any minimum standards, we want to do something good“, which is a clear statement of the DIAL philosophy, „In our opinion, even under the aspect of energy efficiency it is better to use more electric energy to maintain the health and performance of the people.“ This is why up to 2,000 Lux flood the offices in Lüdenscheid, but not permanently. Moreover, the lighting follows the course of a sunny day. An indirect lighting using dimmable highly-efficient fluorescent tubes ensure for the blue sky, LED spotlights simulate the sun rays and thus dab warm accents in the more or less cold atmosphere.

Smartphone instead of light switch

Naturally, the employees must be able to influence the lighting. The use of dimmers or even switches can however, no longer exhaust the offer of light scenarios in a reasonable manner. As a consequence, these have been left out. The operation is mainly carried out per application on a computer or smartphone. The employees can choose between three different lighting levels that are run automatically throughout the day. As an option, they can also dim individually. Next to the control of the light quality, the application also offers

access to the ventilation and temperature. As the smartphones are used as telecommunication devices and for access checks, DIAL could do without a conventional telecommunication system completely.

Test bench for presence detector

Despite the sophisticated software, a high degree of energy efficiency and comfort cannot be achieved by a computer and smartphone alone. Which employees think about reducing the heating and lighting when they leave the room and who wants to call up an application in the dark to turn on the light? That is provided by presence detectors that, in the case of DIAL, naturally also have to fulfil the demanding specifications for technology and aesthetic according to the building system design. In this way, there are not suspended ceilings in the offices, only a reduced ceiling installation is intended for the lighting and fire alarm systems. The reason for this is in the thermal requirements of a passive house: the painted raw concrete ceilings are included in the climate concept. Being so-called passive concrete core activation, they are a climate buffer for heat and cold.

In order to keep the ceiling as free as possible, the detectors must be integrated into the suspended lighting that the Danish manufacturer Rigens has designed exclusively for DIAL. For this reason, the detectors should be adapted to the design of the light that has been kept very simple on purpose. At the same time, they should detect reliably despite the relatively low height of the entire room. In order to ensure for this, a reference room has been created according to the plans, and equipped with detectors from different manufacturers. This allowed the respective detector sensitivity to be tested under similar conditions.

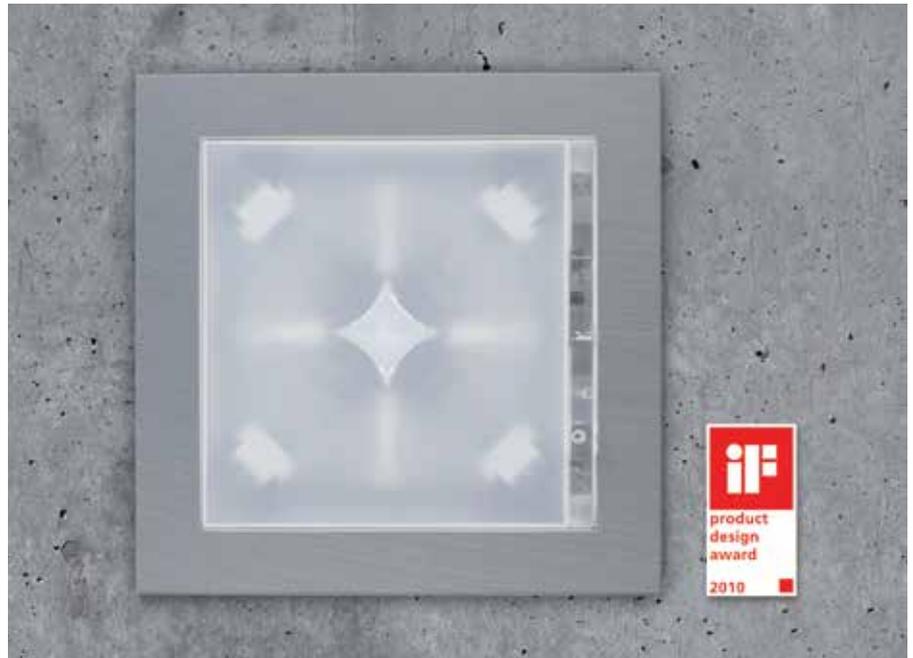


The PlanoCentro presence detector is inconspicuously integrated into the housing for the indirect main lighting. An additional LED spotlight sets the accents.

Andreas Bossow: „We wanted devices with a high detection quality and wide detection area. The PlanoCentro from Theben was one of the best. The final push was thanks to the design. At this time, it was the only one available with the required detection area in combination with a completely flat and level design. That was important to us for design reasons.“ The manufacturer Rigenz was provided with a special version without frame as a sample detector that they could use to adapt the cut-out in the housing flush to the surface. Thanks to a lens curved inwards, the housing of the detector is so low that it does not protrude out of the light. For this concept that could be integrated harmonically into ever architecture, PlanoCentro was presented the “iF Award 2010”.

Multi-functional detector

The PlanoCentro detectors installed in the 30 offices must take over many tasks. Initially there is the constant light control according to the three different daylight flows low, medium and high. In doing so, the nominal value is moved permanently in order to simulate a wonderful sunny day. The detector controls a mixed light measurement to allow it to compensate the daylight in the room. This reduces the artificial light share that, on the other hand, has a positive effect on the lighting costs and the CO₂ effect. When the employee leaves the room, the lighting and ventilation are switched off. And this is why the detector must operate accurately. Here the PlanoCentro scores with a quadratic detection area. On the one hand it also detects the corners of the room and on the other hand, prevents faulty switching as it does „look into the corridor“ through the open door as with a detector with round detection area. The detection area depends on the installation height. With a 2.5 m detection area, it is 6 m x 6 m for persons sitting, or 8 m x 8 m for people walking. It is suitable for all conventional illuminants, such as fluorescent lamps, compact fluorescent lamps, halogen / incandescent lamps as well as



The PlanoCentro presence detector is one of the flattest cubic detectors on the market. It has been presented with the iF Award 2010 for its design.

LEDs. In doing so, the brightness can control over a range of 5-2,000 Lux.

The detector as networking device

For the integration into the building services engineering, the PlanoCentro is equipped with a KNX interface. This was also a decisive advantage for the DIAL project, as Andreas Bossow explained: „With regard to inter-interoparability, KNX is one of the best bus systems for building services engineering. Moreover, there are also many KNX compatible components on the market. In our new construction, in addition to using this bus in the presence detectors, we are also using it for recording the temperature in the ventilation ducts and for controlling via the visualisation application.“ A total of five systems are used in the DIAL building: next to the mentioned KNX, these are DALI for dimming the highly efficient fluorescent tubes, the MP bus for volume flow control in the ventilation system, LON for the ventilation system and SMI for the swit-

ching. The latter permits a highly precise positioning of the blinds. In summer, the so-called Cut-Off-Position can be reduced with this despite the maximum outdoor brightness access of the heat load. However, Andreas Bossow places great emphasis that the new construction is not operated as an exhibition: „We have represented the teaching of the Building System Design - the requirement-orientated approach: what does the user need and how can this be solved most economically“, which is his conclusion to the cleverly designed concept, and he adds „More and more functions are being mentioned in conjunction with building services engineering. These are necessary, but the aesthetic is also important. This will be considered even more in modern building engineering. The PlanoCentro with its flat design is a very good example for this. It was particularly well integrated into the cubic design of our new construction.“

Customer	DIAL GmbH, Lüdenscheid
Project	Lighting management in administration building
Planning & Integration	DIAL GmbH Andreas Bossow, deputy managing director DIAL GmbH Bahnhofsallee 18 58507 Lüdenscheid +49 (0) 23 51/5674-0 www.dial.de

Image source: Alexander Ring, Thomas Bach, Theben AG

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AESCULAP AG, TUTTLINGEN, GERMANY

Light management with PlanoCentro KNX presence detectors

The story of medical technology was written in Tuttlingen. Surgical instruments and state-of-the-art implant technology from the city on the Upper Danube are used worldwide. Aesculap AG is part of the B. Braun Group and thereby one of the global leaders in the field of medical technology

Framed by the modern architecture of the Aesculapium and highly technical production plants, the historic Aesculap building is a Tuttlingen landmark. The industrial architecture of 1898 is listed and is now used as office space. The historic exterior of the building houses modern offices that meet the demands of today's working environment. That's why it's now being modernised. In updating the electrical installations and room lighting, the company is focusing on energy efficiency. PlanoCentro KNX presence detectors from Theben provide optimum lighting conditions in the modern design of the rooms.

TARGET

- Energy saving and well-being
- Automatic and semi-automatic control
- Accurate detection
- Use of daylight
- Transient light
- Control of heating and lighting
- Central control
- Visualisation
- Subtle design



SOLUTION

- Control using the PlanoCentro KNX presence detector
- Fully or semi-automatic function
- Square detection area (10 m x 10 m at an installation height of 3.5 m)
- Constant light control
- Short presence with reduced run-on time
- HVAC channel with switch-on delay
- Networking via KNX (EIB), remote configuration via ETS
- Award-winning design



The 1898 Aesculap building by industrial architects Philipp Jakob Manz.

Presence detectors tried and tested

The Aesculap office concept sets out clear requirements for lighting control: “No more manual switches as the lighting in the room should be set automatically to meet the employees’ requirements.” Explained system administrator Patrick Lochbaum. In the central area, with its printer section, communications corner, cafeteria and access to the work stations, eight presence detectors, discretely mounted in the ceiling, register all movement by staff and visitors. The decision to opt for the PlanoCentro KNX presence detector, with its “iF product design award 2010”, took account of the flat flush-mounted design and its functionality.

Presence signal for HVAC

Anybody in the detection can rely on pleasant lighting (500 lux). Natural daylight can reduce the need for artificial lighting here as the PlanoCentro KNX presence detector is equipped with a constant light control. The devices are set to fully automatic with the exception of the two meeting rooms. The light is turned on via a wall switch and off automatically after the presence

“We test and compare with other devices. And we have discovered that ThebenHTS products have better detection qualities and switch more reliably.”

**PATRICK LOCHBAUM
SYSTEM ADMINISTRATION
AESCLAP AG**

signal stays off and a self-taught run-on time is completed. The presence signal is also used to switch from standby and comfort mode with HVAC. Switch-on delay and run-on time of the relevant presence channel thereby prevents brief reactions. The lighting for workstations equipped with floor lamps are also switched on and off automatically. Employees can operate the dimmer function individually and manually. The brightness in the central area is reduced by ten per cent if it is unoccupied. Complete darkness

outside working hours only happens if the “Off command” comes from the building management system. And this can be overridden by people working late using an emergency switch.



Visualisation of current performance: Divided into lighting and power consumption of office devices such as computers etc..

Energy comparisons old and new

These and other functions ensure energy efficiency, security and the feeling of well-being. Everybody at Aesculap is justifiably proud of the successful integration of the different bus systems used: “The main control is a central SPS where we bring together the KNX (EIB) bus technologies, of the presence detector, BACnet IP of the HVAC technology, DALI for the lighting and EnOcean radio control of window contacts and temperature sensors,” explained Markus Stoll. It also connected to the building management system at the same time. The SPS controller provides direct visualisation for local controls. And even the lighting power consumption is recorded. In future, this will be used to compare power consumption in new and old offices and will demonstrate whether the predicted savings of 40 to a maximum of 70 per cent can be achieved. ■

CUSTOMER	Aesculap AG ■ Tuttlingen ■ Germany
PROJECT	Lighting management in administration building
PLANNING & INTEGRATION	Aesculap AG ■ Patrick Lochbaum, System administration ■ Markus Stoll, deputy manager ■ Electronics workshop Am Aesculap-Platz ■ D-78532 Tuttlingen ■ +49 (0) 74 61/ 95- 0 ■ www.bbBraun.de



TIMBER BUILDING BADEN-WÜRTTEMBERG, OSTFILDERN

Award-winning PlanoCentro presence detector in state-of-the-art architecture

Natural and artificial light

The Forum Holzbau is not just a multi-function building with meeting and office space. It houses the Association of Joiners and the Timber Trade in Baden-Württemberg (Verband des Zimmerer- und Holzbaugewerbes Baden-Württemberg e.V.) and eight other organisations from that sector. The modern architecture, the bold timber structure and climate-friendly energy plan of the 2011 building demonstrate the enormous potential of wood as a building material. You can smell and feel the wood here as all the interior surfaces are untreated.

The optical impression comes alive through light: From natural light that floods the atrium during the day and from artificial light that accentuates the wood ambience at dusk and at night. PlanoCentro presence detectors are in demand here. Discreetly built into the wooden ceiling, they automatically switch the lighting from a decent basic brightness to comfortable light when someone enters the central hall and back when the room is vacated.

FUNCTION

- Automatic lighting control
- Harmonious integration in interior decor made of wood
- Detection in different room scenarios
- Impressive, comfortable and energy-saving lighting
- Integration in KNX installation bus technology



SOLUTION

- Light control with the PlanoCentro KNX presence detector
- Flush-mounted ceiling device in flat design with covers available in white, silver or black
- Square detection area for accurate and easy planning
- Two light channels for switching and constant light control
- Brief-presence function with reduced time delay
- Possible master/slave or master/master parallel switching
- Configuration via ETS Engineering Tool Software
- Brightness set point values can be set via the bus object
- Scene functionality
- Award-winning design

To frames for ceiling installation

The project was already underway when the Kienle Engineering Office became aware of the new KNX PlanoCentro with its super slim design and they recommended them as a late alternative to the planned surface-mounted detectors.

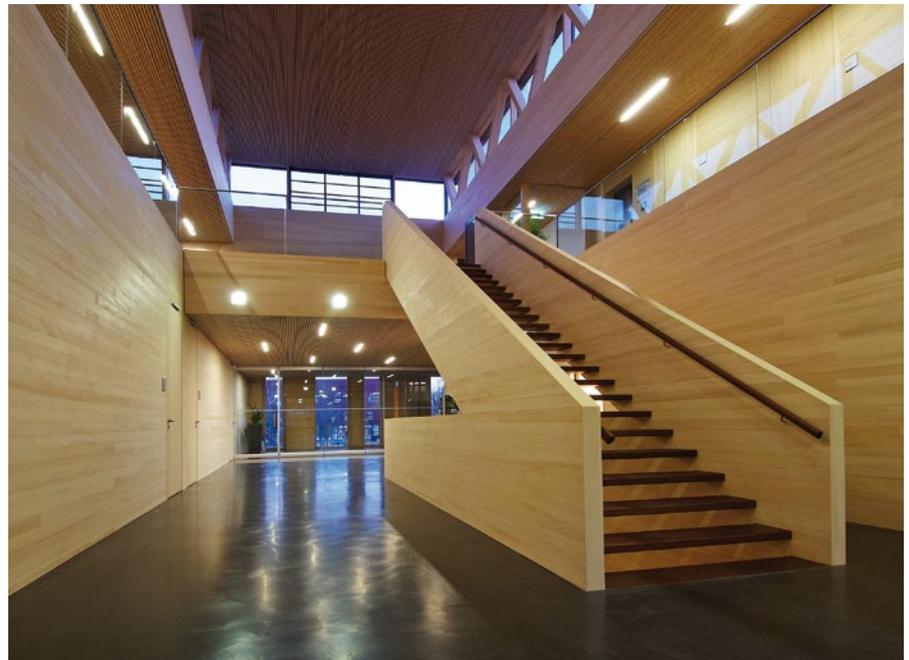
"The flat presence detectors found immediate approval from the building company and fit in very well with the internal architecture."

**THOMAS GRÖNER,
ELECTRICAL ENGINEER,
KLENLE BERATENDE INGENIEURE GMBH**

Colour matching to the silver fir wooden ceiling was achieved with the silver-coloured version (ESR-A) and with white frames (EWH-A) for plastered ceilings. And the subsequent planning was straightforward: The large



Harmonious integration of the PlanoCentro KNX presence detector



Daylight and artificial light accentuate the wooden decor.

square detection area of the detector enabled symmetrical positioning in the ceiling without having to cut corners in terms of detection quality

Flexible for seminars

If people are present in the atrium, the detectors send a switch-on command to the bus at light levels below 150 lux. If someone briefly walks through, as in corridors and stairways, the brief-presence function prevents an unnecessarily long time delay.

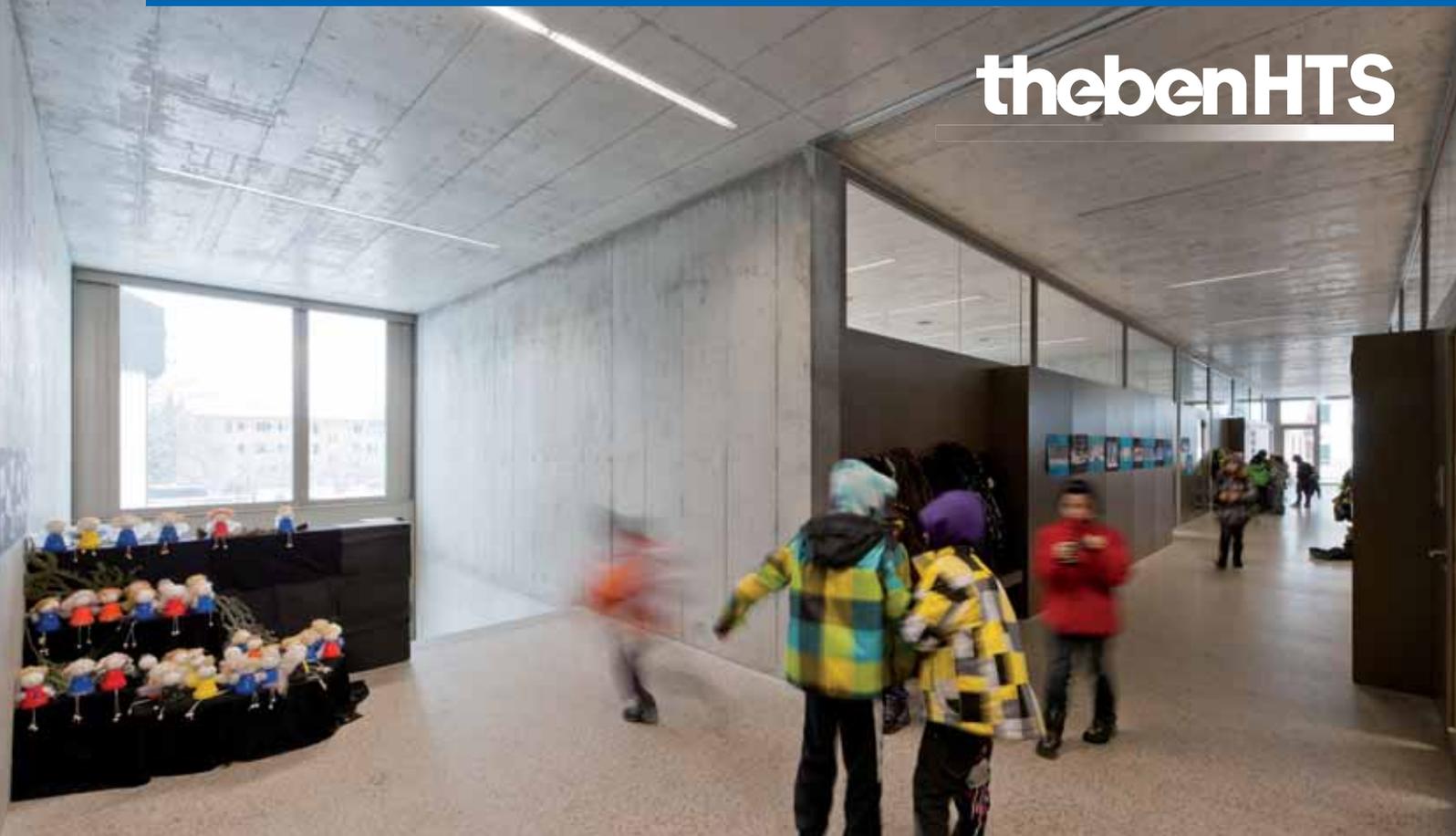
The presence detectors in the meeting rooms are also configured for constant light control. Artificial light then augments the daylight by the necessary difference to the required brightness setpoint value, which further reduces electricity consumption. As the rooms can be partitioned, a KNX contact enables the two PlanoCentro KNX devices to be switched from master/slave mode

to individual mode when the dividing wall is closed. The presence detectors have to be overridden during meetings with visual presentations to prevent the light coming on when the room lights are dimmed. This is achieved using scene push buttons, which simultaneously close blinds, bring up the screen and switch on the projector.

PlanoCentro KNX detectors also control the lighting in the toilets in the basement. A total of 23 presence detectors in the Forum Holzbau provide comfortable and energy-saving lighting.

Moreover: The PlanoCentro won the "if design award" for product design in 2010. ■

CLIENT	Verband des Zimmerer- und Holzbaugewerbes Baden-Württemberg ■ Hellmuth-Hirth-Straße 7 ■ 73760 Ostfildern www.holzbau-online.de
PROJECT	Lighting management in multifunctional building with meeting and office space
ARCHITECTS	Glück+Partner GmbH Freelance Architects BDA ■ 70197 Stuttgart ■ Augustenstraße 87 ■ www.glueck-partner.de
PLANNING	Kienle beratende Ingenieure GmbH ■ Riedstraße 25 ■ 88356 Ostrach ■ www.kienle-ingenieure.de
INTEGRATION	Heldele GmbH ■ Julius-Hölder-Straße 39-41 ■ 70597 Stuttgart ■ www.heldele.de



SÄNTISHALLE AND ARBON SCHOOL BUILDING, SWITZERLAND

PlanoCentro KNX – The invisible solution with the large detection area

The new Sântishalle, designed by architects Michael Meier and Marius Hug, makes an impression at first sight with its modern architecture. A closer look reveals that the building technology to be absolutely contemporary: Working in harmony with the KNX building system control, the award-winning PlanoCentro KNX presence detector ensures presence-dependent and energy-efficient lighting control.

The Sântishalle school building in Arbon was officially handed over after a construction period of just 15 months. The Sântisbau has four modern classrooms with adjoining common rooms above a bright, inviting and large gymnasium. The multi-purpose room in the main building has room for large-scale events such as concerts, plays and briefing sessions organised by the education authority. Next to the spacious foyer, there is a cafeteria, where the school offers organised lunches.

FUNCTION

- Presence-dependent lighting
- Automatic lighting control
- Ease of use
- Extensive and reliable detection
- Minimal energy consumption
- Architecturally-sympathetic design



SOLUTION

- PlanoCentro KNX presence detector
- Flat design with special frame colours
- Rectangular detection area
- Mixed light measurement
- Suitable for fluorescent, compact fluorescent, halogen and incandescent lamps as well as LEDs
- High-quality technology with clear KNX programming





With its sensitive detection capability, the PlanoCentro guarantees individually-tailored and energy-efficient lighting and climate control.

Almost invisible technology

The modern architecture of the Sântishalle also requires state-of-the-art solutions in building technology. All the lights are integrated into the ceilings to make the ceiling as discrete as possible. Visible elements have been painted with special RAL paints to make them appear almost invisible.

In terms of visual effects, presence detectors are one of those building components that architects would ideally like to make invisible. The extremely flat PlanoCentro KNX presence detector from ThebenHTS brings this target much closer: Installed flush to the ceiling, it fits in perfectly with the architecture. Moreover, the larger than normal detection area means less detectors have to be installed on the ceiling. Only one presence detector per classroom was needed in the Sântishalle. The technical benefits of the PlanoCentro KNX also speak for themselves. The detection area is square and thereby matches typical room layouts. It covers an area of up to 100 square metres. This makes it the first presence detector on the market to combine an extremely flat design with such a large detection area.

Comfort and energy-efficiency

Demands for intelligent and energy-efficient building services engineering makes it essential for rooms to be lit, ventilated and heated when they are being used. The use of a room dictates the setting of the PlanoCentro. The presence detectors in the corridors are set to fully automatic: The lights only come on when required. The presence detectors are operated in semi-automatic mode in the classrooms to allow the teachers and pupils to choose the lighting themselves. If the light is still on at the end of a lesson, it will switch off on its own after a set length of time. Moreover, if the room is briefly occupied, the detector will reduce the time delay itself.

Choice of functions as required.

The PlanoCentro KNX is configured by the system integrator using the ETS4. A wide range of intelligent, energy-saving applications are available. For example, two independent brightness thresholds make it possible to set different brightness levels for weekdays and weekends. The threshold can be set on site using the caretaker's touch panel according to the prevailing brightness level. An integrated infra red receiver also makes it

"Beautiful design, simple and a clearer structure: This applies to the architecture and the technology in the Sântishalle."

GABRIELA TRAXEL,
MICHAEL MEIER AND MARIUS HUG
ARCHITEKTEN AG, ZÜRICH

possible to control the room remotely. Daniel Schär, project manager and system integrator at ETAVIS Grossebacher, uses the SendoPro remote control for an easy set-up. This enables the parameters to be adjusted efficiently and easily on the spot or the option of the installed ThebenHTS presence detector. ■

CLIENT	Primarschulgemeinde Arbon ■ Schlossgasse 4 ■ CH-9320 Arbon
PROJECT	Lighting control in the gymnasium and classrooms
ELECTRICAL PLANNING	MARQUART Elektroplanung + Beratung ■ Kriessernstr. 40 ■ CH-9450 Altstätten ■ Tel. 071 757 03 00 ■ www.maq.ch
INTEGRATION	ETAVIS Grossebacher AG ■ Oststrasse 25 ■ CH-9006 St. Gallen ■ www.etavis.ch