Jürgen Schilder, Thorsten Reibel – Global Application and Solution Team March 2016

ABB GPG Building Automation
Webinar ABB i-bus® KNX
Basics and Products

Power and productivity for a better world™

Webinar “ABB i-bus® KNX - Basics and Products“
Agenda

Welcome

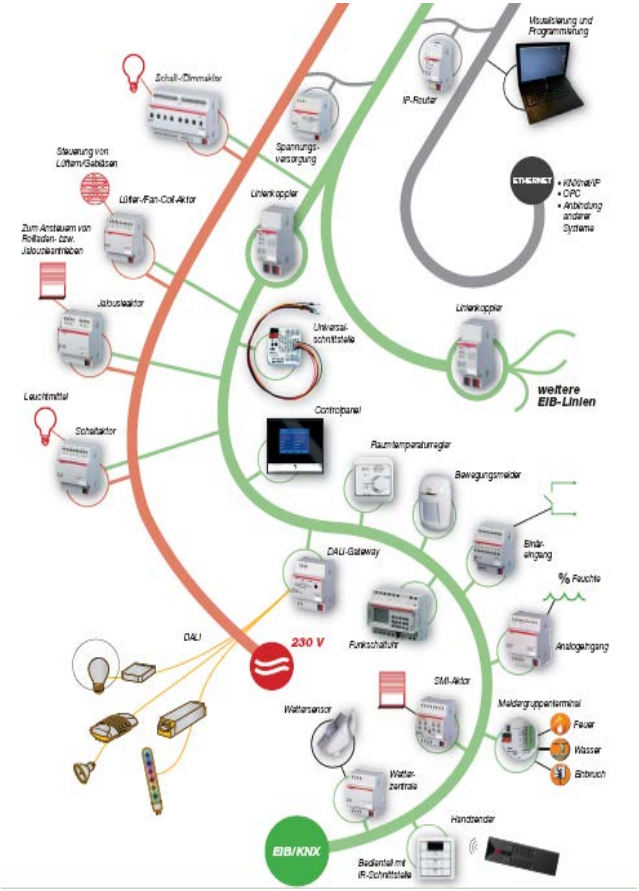
to the worldwide STANDARD for home and building control

Welcome

to ABB i-bus® KNX

- Advantages KNX
- KNX Organisation
- Applications
- Technology
- Projects
- ABB i-bus® KNX Products

Webinar “ABB i-bus® KNX - Basics and Products“
Overview



- KNX is the first open standard for home & building control
- Fully compatible and interoperable
- Truly open bus technology
- Over 400 manufacturers in 38 countries
- Thousands of products
- 360 KNX training centres worldwide
- 48,200 KNX partners in 140 countries
- Several applications
- www.knx.org

Webinar “ABB i-bus® KNX - Basics and Products“
Advantages KNX

International Standard, therefore future proof

- **CENELEC**
  KNX became EN50090
- **CEN**
  KNX became EN13321-1/2
- **ISO/IEC**
  KNX became ISO/IEC14543-3
- **SAC**
  KNX became GB/Z20965
- **ANSI/ASHRAE**
  KNX became US ANSI/ASHRAE standard 135

By product certification, KNX guarantees Interoperability & Interworking of products

- KNX is the only standard running global certification schemes for **products, training centers and even for persons**. Product compliance is checked at neutral laboratories.

KNX stamp ensures Interoperability & Interworking

Different products of *different* manufactures can be used in *different* applications

Source: KNX Organisation www.knx.org

Webinar “ABB i-bus® KNX - Basics and Products“
Advantages KNX

KNX stands for high product quality

- KNX Association requires a high level of production and quality control during all stages of the product life

ISO International Organization for Standardization

- All manufacturers have to show compliance to ISO 9001

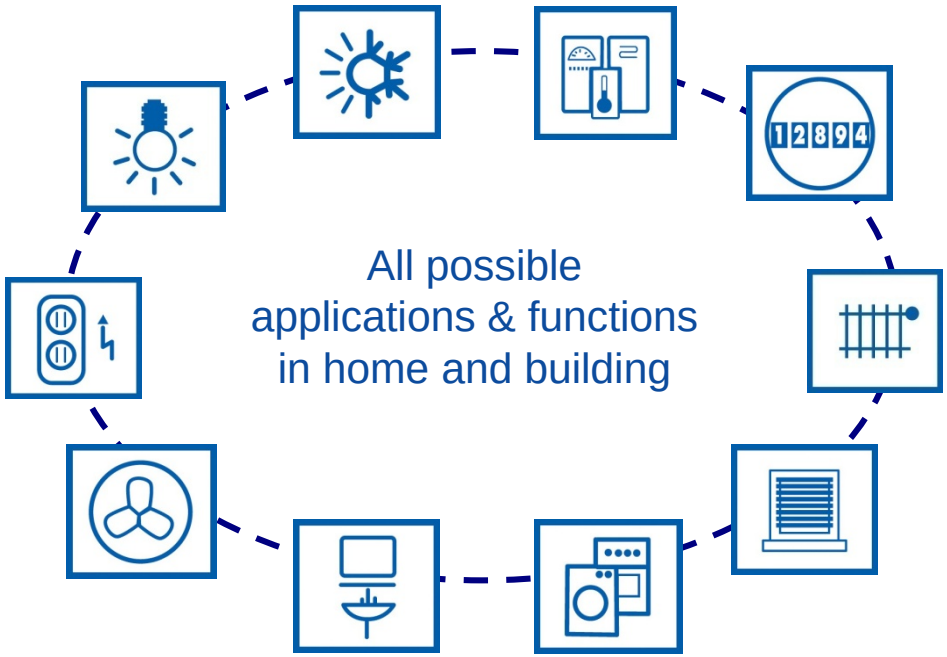
A unique manufacturer independent ETS

- The PC software tool ETS allows the planning, engineering and configuration of all KNX certified products
- The tool is moreover manufacturer independent: the system integrator is able to combine products of different manufacturers to one installation

Source: KNX Organisation www.knx.org

Webinar “ABB i-bus® KNX - Basics and Products“
Advantages KNX

KNX can be used for all applications in home and building control



KNX is fit for use in different kind of buildings

- New and existing buildings
- Small size houses & large buildings
- Easily extended and adapted to new needs

Source: KNX Organisation www.knx.org

Webinar “ABB i-bus® KNX - Basics and Products“
Advantages KNX

KNX supports several Communication Media

- Twisted Pair (TP)
- Power Line (PL)
- Radio Frequency (RF)
- IP/Ethernet

KNX can be coupled to other systems

- KNX has develop sophisticated gateways to help and complete other systems
- Proofs of KNX collaboration are:
  - Mapping with BACnet
  - Possibility to interface with DALI, EnOcean, DMX, RS485, M-BUS, …

Source: KNX Organisation www.knx.org

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More than 400 KNX Members (Manufacturers)

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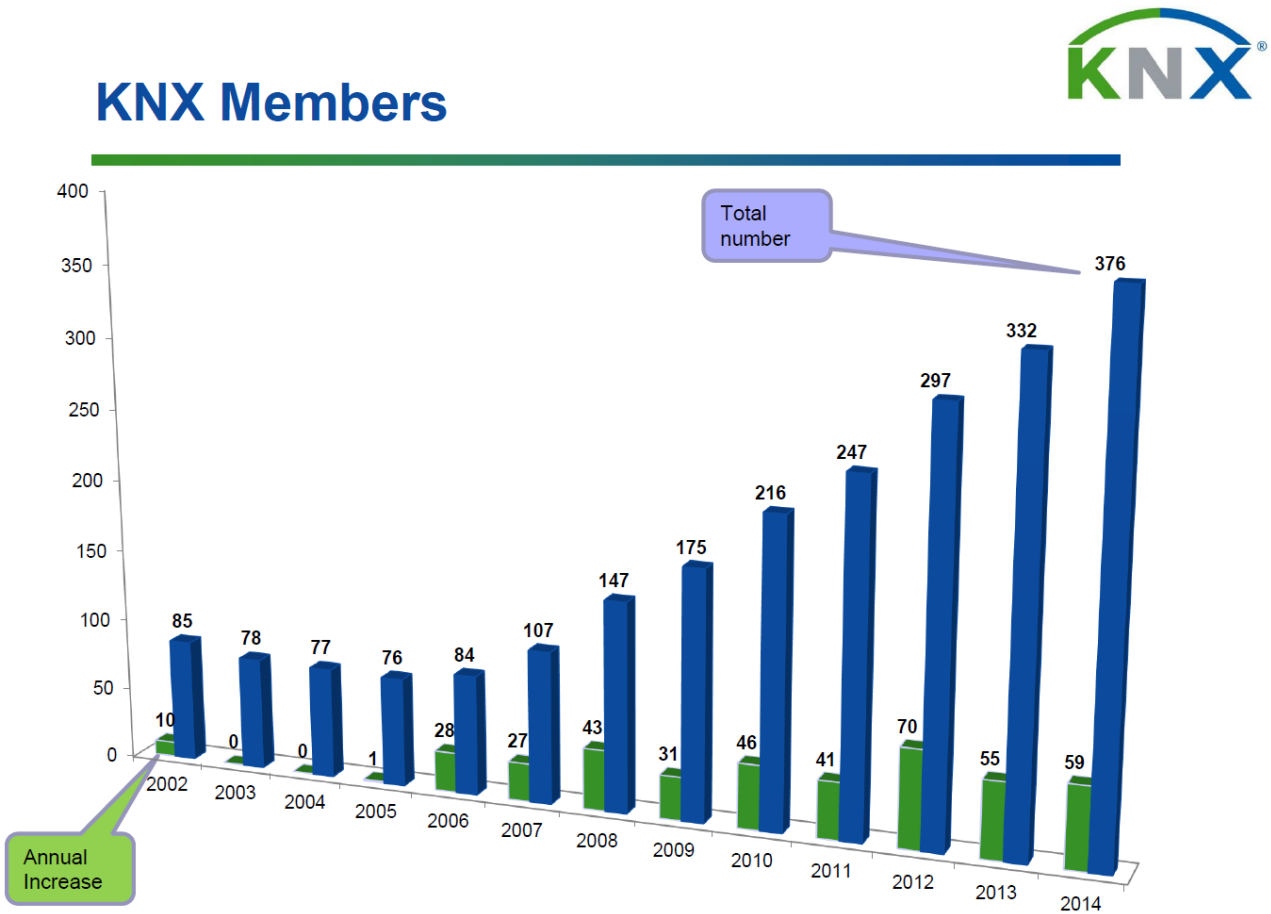
Advantages KNX



Source: KNX Organisation www.knx.org

Webinar “ABB i-bus® KNX - Basics and Products“

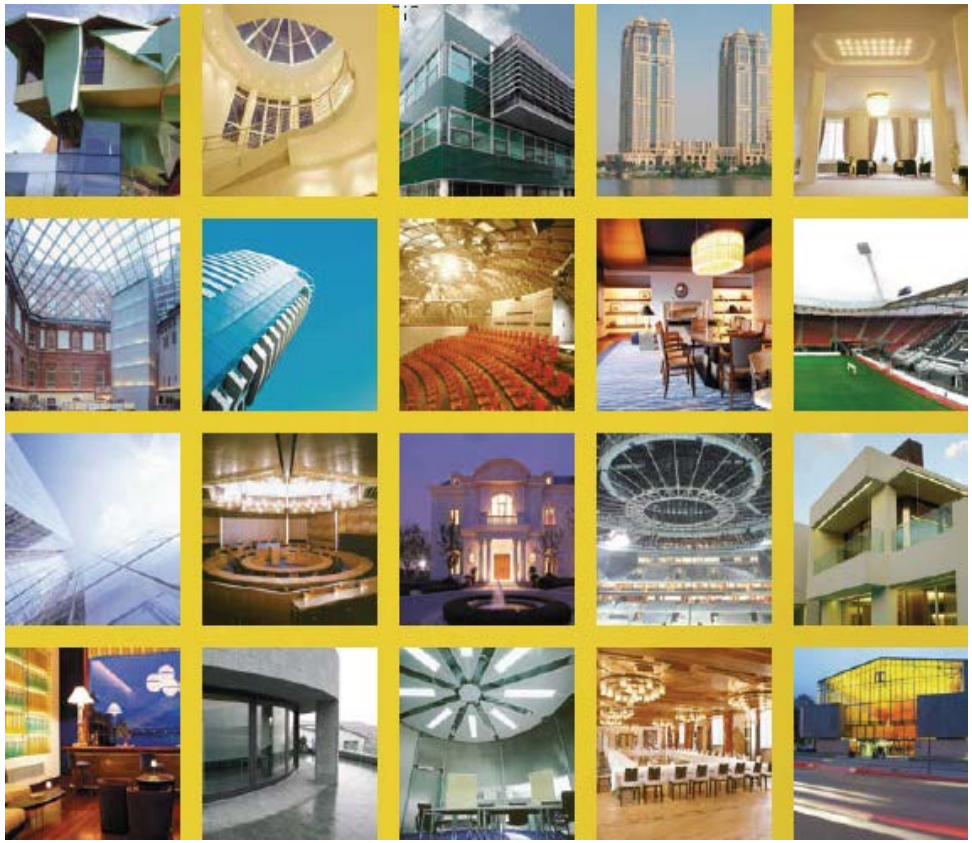
Over 10,000 KNX Devices

Source: KNX Organisation www.knx.org

Webinar “ABB i-bus® KNX - Basics and Products“
KNX Organisation – www.knx.org

- **Mission** is to develop and promote the **KNX** standard so that it is recognised as:
  - **The worldwide STANDARD for home and building control**
- Establish the KNX logo and trademark as a guarantee for quality and interworking of KNX products and solutions
- **Tasks:** Certification, Standardisation, Internationalisation, Engineering Tool Software (ETS), technical development, Working Groups, …

Webinar “ABB i-bus® KNX - Basics and Products“
KNX Projects



- Office Buildings
- Apartments / Villas / Flats
- Hotels / Restaurants / Hospitals
- Exhibition Centers
- Sport stadiums
- Museums / Churches
- Schools / Universities
- Banks
- Airports / Train Stations
- Industrial Facilities
- Shopping centers

Webinar “ABB i-bus® KNX - Basics and Products“
KNX Applications

- Lighting Control / Constant Light Control
- Heating, Air-conditioning and Ventilation
- Roller Shutter, Window and Blind Control
- Building Surveillance and personal Protection
- Visualisation, Display and Signalling
- Central Automation
- Remote Control / Remote Access
- Interfacing to other Systems
- Energy- and Loadmanagement
- …

Webinar “ABB i-bus® KNX - Basics and Products“
Lighting Control

**Local - Groups - Central - Time controlled -
Motion controlled - Event controlled**

Push Button
„triton“ 5-fold

Dim Actuator

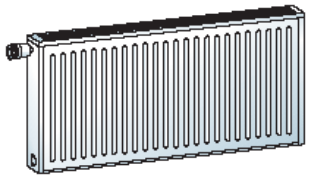
Motion Detector

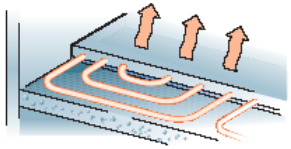
Webinar “ABB i-bus® KNX - Basics and Products“
Heating, Cooling, Airconditioning

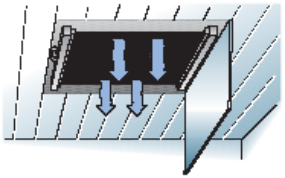
Individual Room Control – Time and Remote controlled

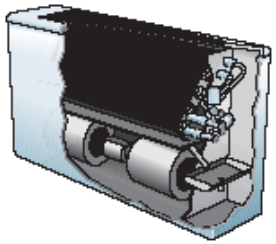
Room Thermostat

Electrothermal or
Electro-motorical Valve



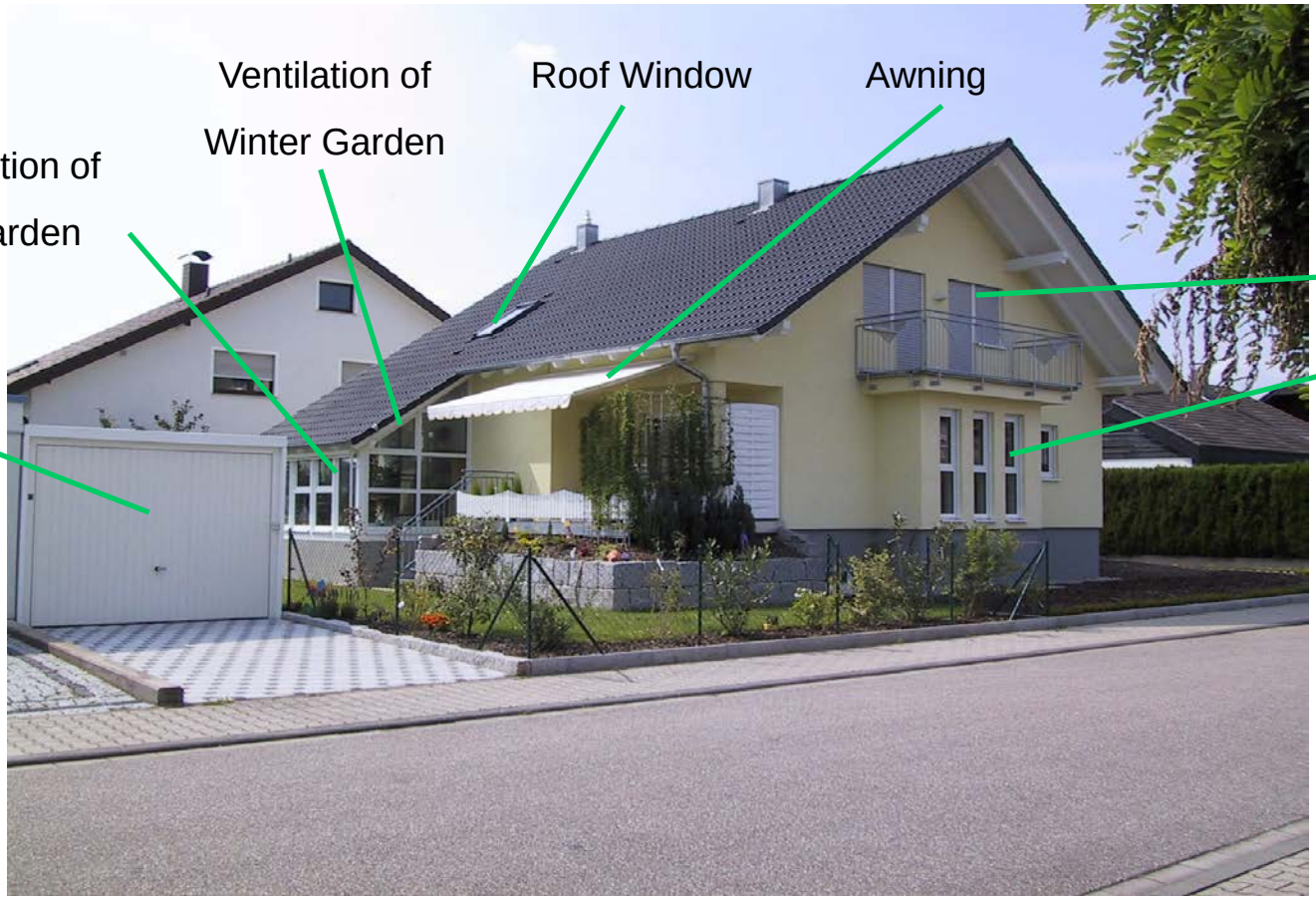






Webinar “ABB i-bus® KNX - Basics and Products“
Shutter and Blind Control

Separate - Groups - Central - Depending on Sun, Rain or Wind



Webinar “ABB i-bus® KNX - Basics and Products“
Security in Buildings

Technical Sensors supervise your Home (e.g. Water Detector)

Indication and Control of all Functions in your Home

Security Terminal for Security Applications

Telephone Gateway

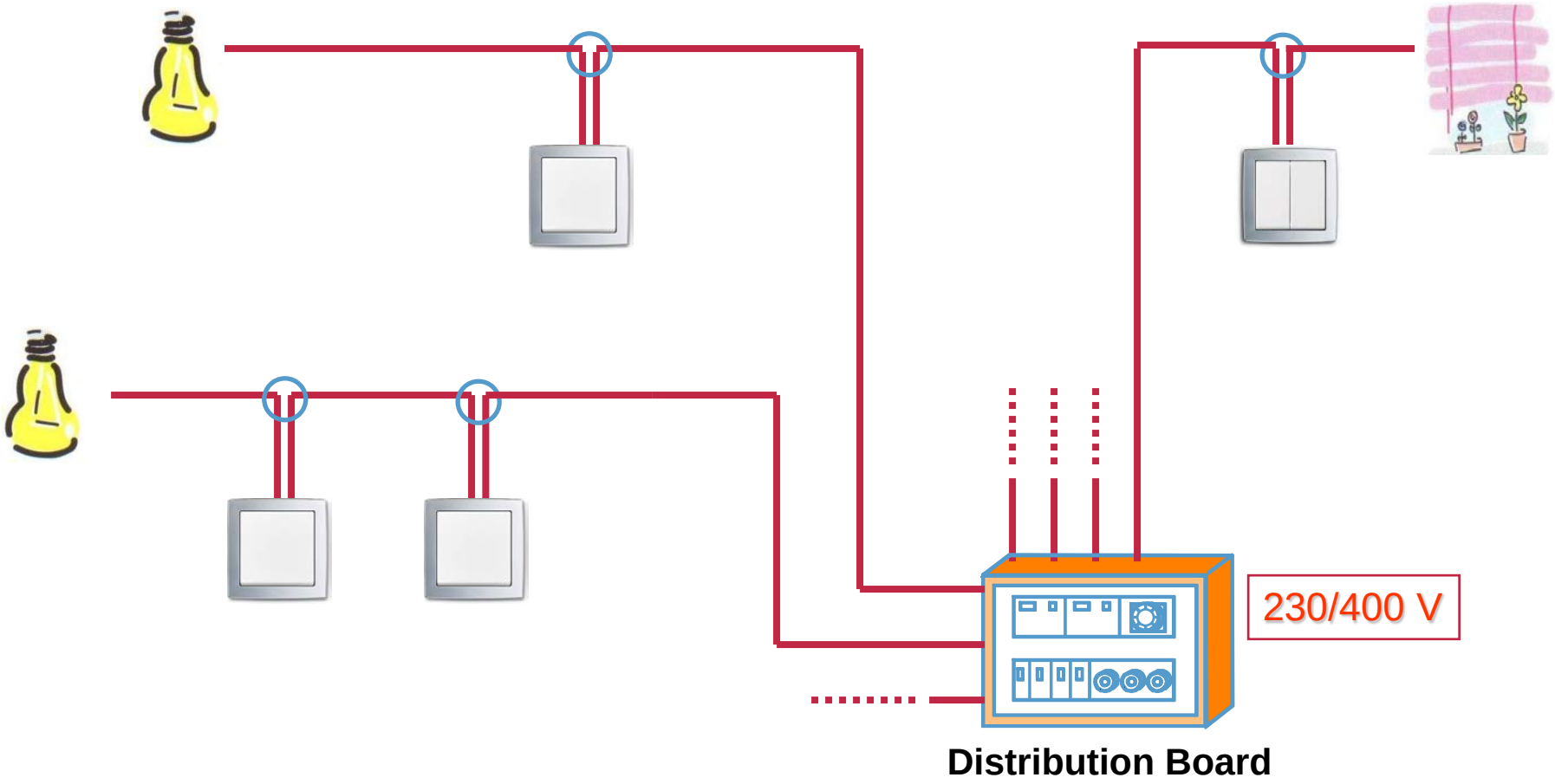
Smoke Detector

Switching off any Circuits

Simulation of Presence

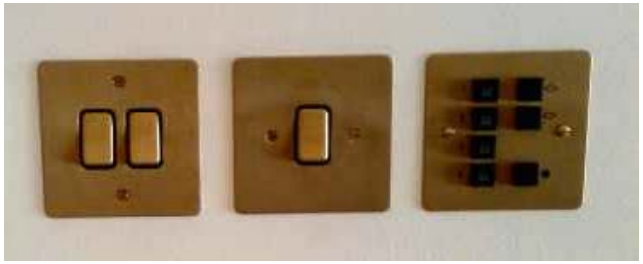
Webinar “ABB i-bus® KNX - Basics and Products“

Traditional electrical Installation



Webinar “ABB i-bus® KNX - Basics and Products“
Electrical Installation without and with KNX

- Multi units e.g. Lighting/Dimming, shutters, AC, …

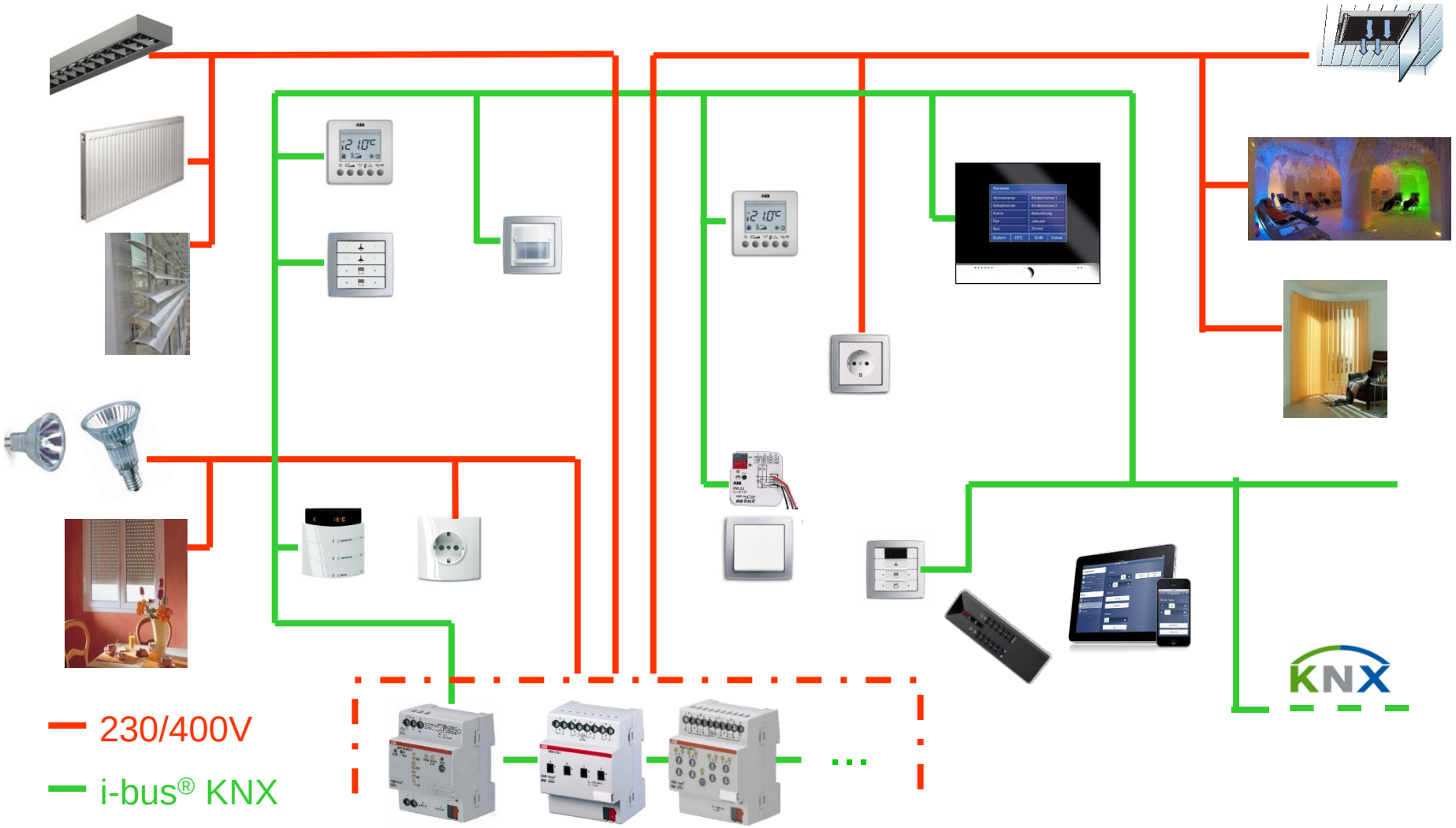


or so

→ with only one

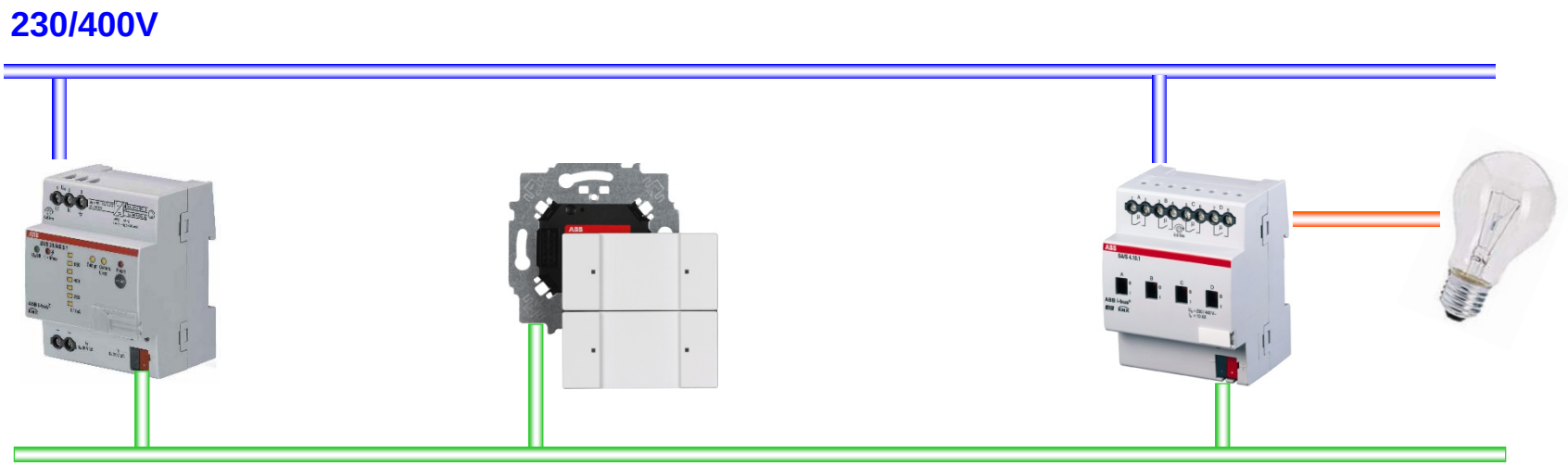
Webinar “ABB i-bus® KNX - Basics and Products“

Electrical Installation with KNX

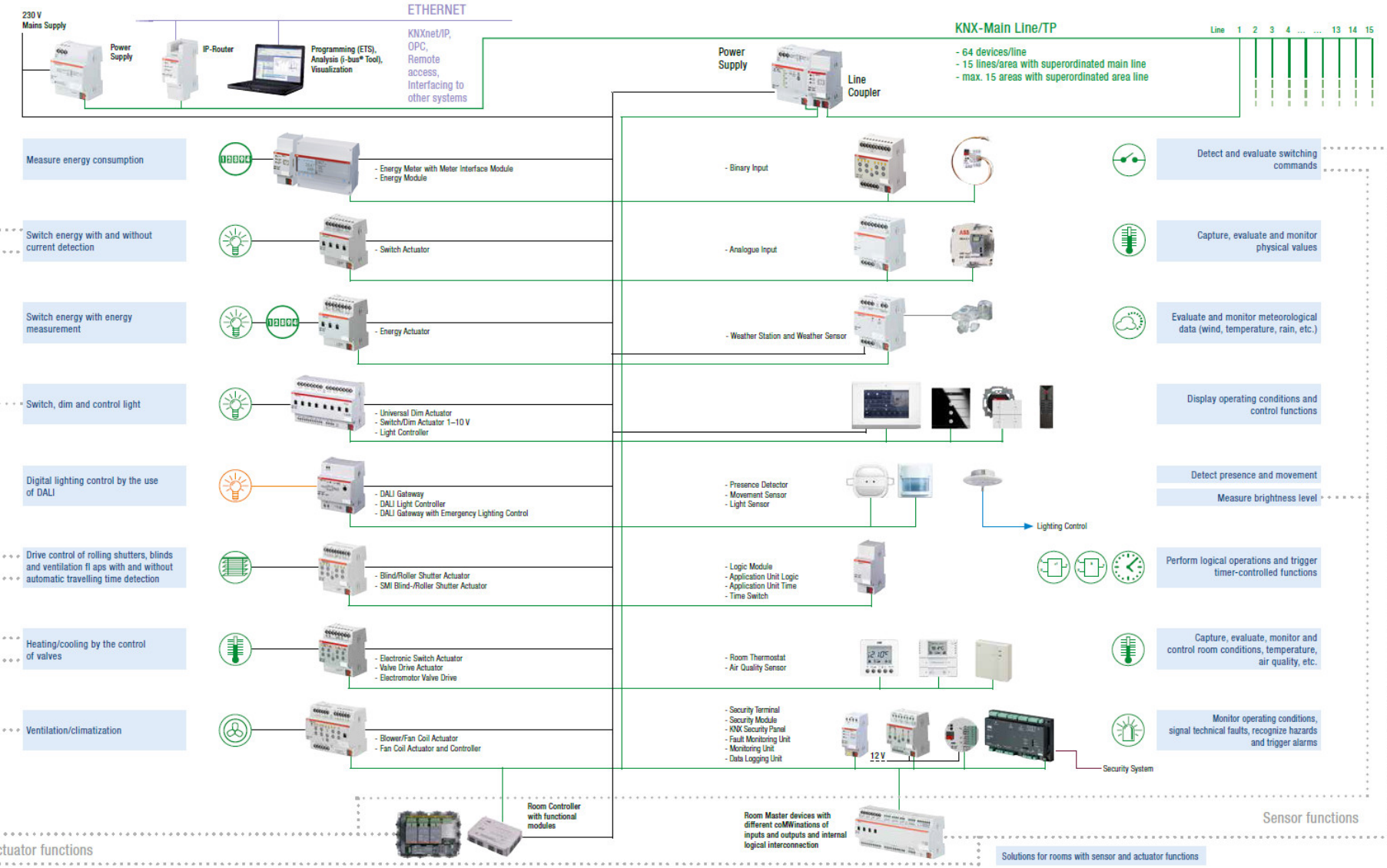


Webinar “ABB i-bus® KNX - Basics and Products“
Electrical Installation with KNX

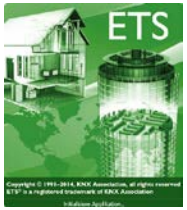
- 2 devices can collaborate with a power supply via the bus line in the smallest configuration
- The installation bus progressively adapts itself to the size of the system and the required functions and can be extended to more than 57,000 devices

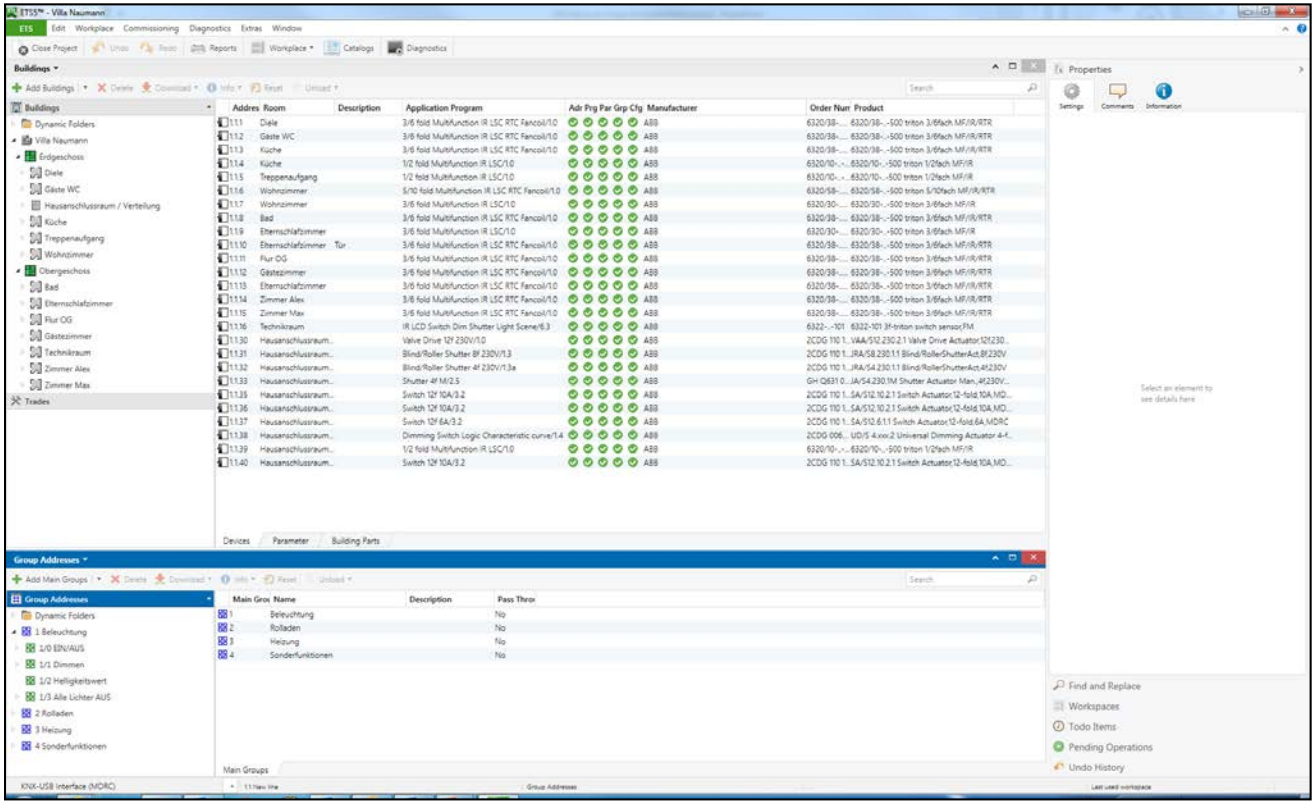


Webinar “ABB i-bus® KNX - Basics and Products“
Overview



Webinar “ABB i-bus® KNX - Basics and Products“
Software ETS5





Webinar “ABB i-bus® KNX - Basics and Products“
Project Office Building

- Building with 4 floors and about 20000 m²
- Office rooms for one or more persons, corridors, restrooms, conference rooms

Functions:

- Control of illumination
- Control of blinds
- Control of windows (Double facade)
- Fault indication
- Control of skylights
- Central control (Tableau) and visualization

Webinar “ABB i-bus® KNX - Basics and Products“
Project School

- One level building
- 10 classrooms and general areas

Functions:

- Presence detector to control heating and illumination
- Constant light control in classrooms
- Sun protection
- Control of room temperature
- Supervision of windows (alarm system)

Webinar “ABB i-bus® KNX - Basics and Products“
Reference Projects

Sabic Learning Center, Saudi Arabia

KunMing Airport, China

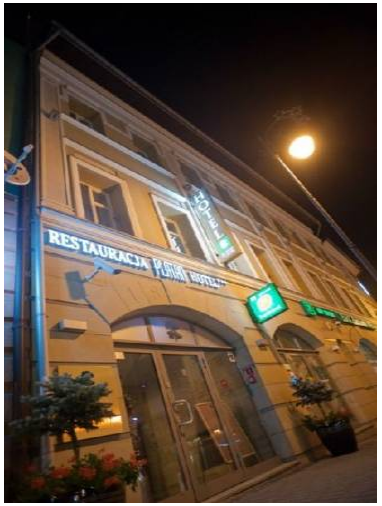
KingKey 100 Project, China

Webinar “ABB i-bus® KNX - Basics and Products“
Reference Projects

Zorlu Zenter, Istanbul

Conrad Hilton, Dubai

Crown Plaza, Dubai



Hotel Platan, Poland

Webinar “ABB i-bus® KNX - Basics and Products“
Reference Projects

Taronga Zoo, Australia

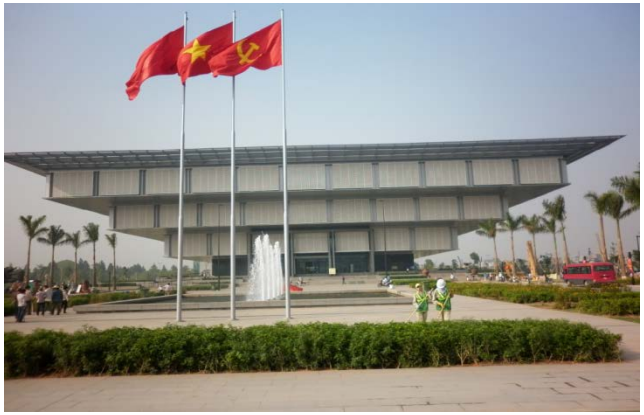
Yacht Saphire, Germany

Kun Ming Airport, China

King Abdula Hotel, Saudi Arabia

Webinar “ABB i-bus® KNX - Basics and Products“
Reference Projects

Google Offices, Russia



Hanoi Museum, Vietnam

Shangri La Hotel, Austria

Music House, Finland

Webinar “ABB i-bus® KNX - Basics and Products“
Reference Projects

Princess Noura University, KSA

Asian Games Stadiums, China

Delhi International Airport, India

Etihad Towers, Abu Dhabi

Webinar “ABB i-bus® KNX - Basics and Products“
Solutions with ABB i-bus® KNX

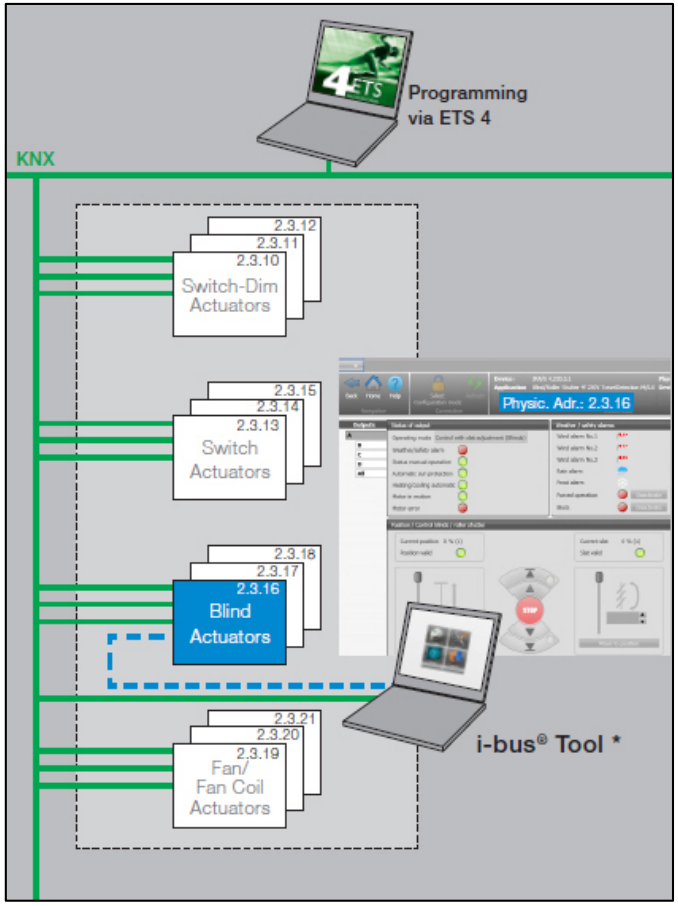
An intelligent and energy saving solution e.g. in an office building should be as follows:

- Presence Detection
- Constant Light Control
- Room Temperature Control
- Shutter control depending on sun position

→ All in one system

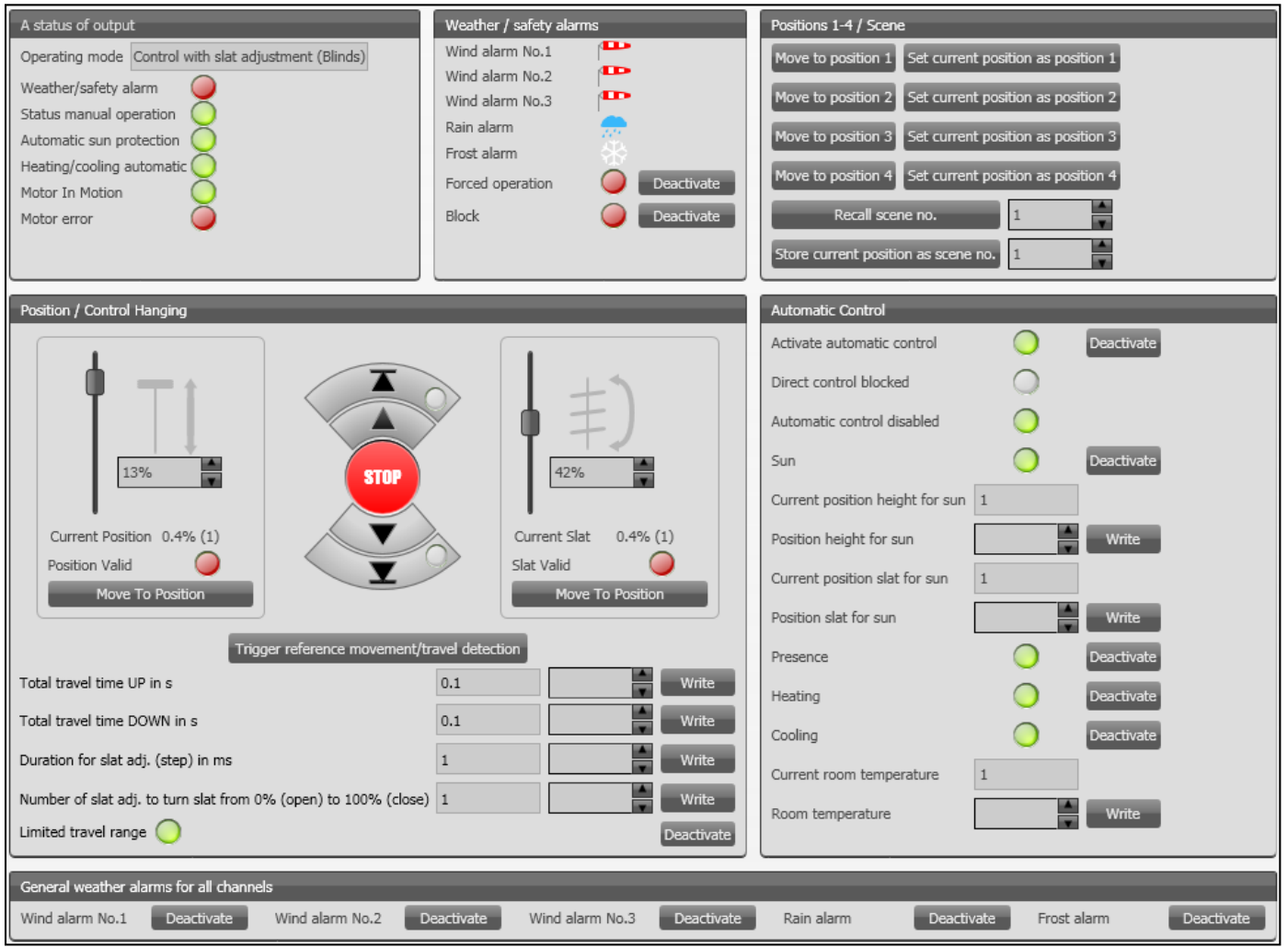
→ Reduced energy consumption by using ABB i-bus® KNX

Webinar “ABB i-bus® KNX - Basics and Products“
i-bus® tool



- Innovative software concept for KNX devices from ABB
- Support of system integrators and installers during commissioning and service
- Internal information and states of the device hardware and software are available in a transparent manner
- Operation possible to test and simulate functions of the components

Webinar “ABB i-bus® KNX - Basics and Products“
i-bus® tool



Webinar “ABB i-bus® KNX - Basics and Products“
Product Range Overview

Webinar “ABB i-bus® KNX - Basics and Products“

Product Range Overview www.abb.com/knx

Webinar “ABB i-bus® KNX - Basics and Products“
Four types of devices

- System components and interfaces:
  - Power supplies, USB Interface, line coupler, IP Router and Interface, EnOcean Gateway, …
- Sensors:
  - Control elements, room thermostats, binary and analogue inputs
- Actuators:
  - Switch actuators, dim actuators, actuators for blinds, fan coil actuators, …
- Controllers:
  - Sensors and actuators can be logically connected together by means of controllers (logic unit, logic module or similar) for more complex functions

Webinar “ABB i-bus® KNX - Basics and Products“
Power Supplies

- KNX power supplies generate the KNX system voltage (SELV)
- The bus line is decoupled from the power supply by an integrated choke
- Current: 160, 320 mA and 640 mA
- Uninterruptible Power Supply: Up to two 12 V DC sealed lead acid batteries connectable in parallel

SV/S 30.x.1.1
160 mA
320 mA
640 mA

SV/S 30.640.5.1
320 mA
640 mA
With integrated bus coupler and diagnostics

SU/S 30.640.1
Uninterruptible
640 mA

+

AM/S 12.1
Battery Module
12 V DC

or

Sealed Lead Acid Batteries
Battery capacity 7 Ah, 12 Ah 17 Ah
2 batteries parallel function

Webinar “ABB i-bus® KNX - Basics and Products“
System Components and Interfaces

- A coupler connects lines or areas
  - Line Coupler (Twisted pair)
  - IP Router (Ethernet network)
- Interface for programming/diagnostics from ETS software
  - USB Interface (Twisted pair)
  - IP Interface (Ethernet network)

LK/S 4.2

IPR/S 3.1.1

USB/S 1.1

IPS/S 3.1.1

Webinar “ABB i-bus® KNX - Basics and Products“
System Components and Interfaces

- IP Switch, Master
- IP Switch, Slave
- Optical Fibre Interface
- KNX/EnOcean Gateway
- KNX TP/RF WaveLine Gateway

ISM/S 5.1

ISS/S 5.1

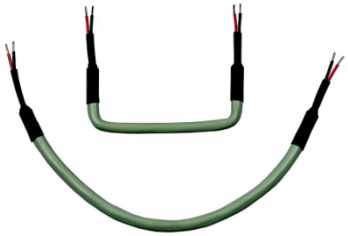
LL/S 1.1

EG/A 32.2.1

6770-500

Webinar “ABB i-bus® KNX - Basics and Products“
Connection and Wiring

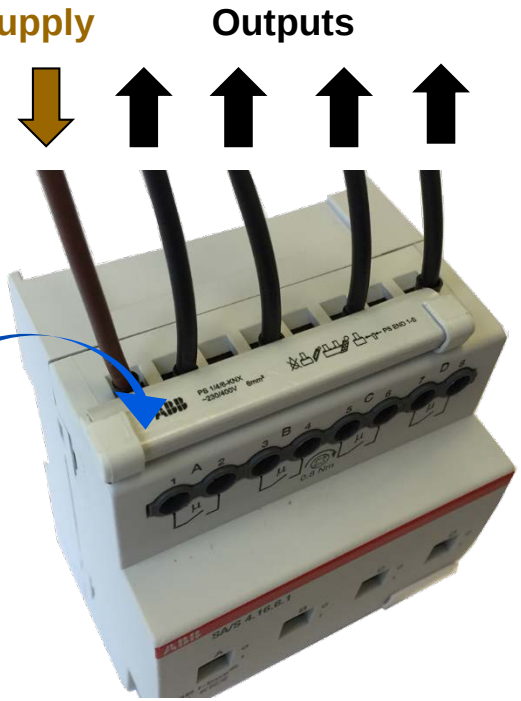
- Wiring Jumpers
- Bus Connection Terminals
- Diagnosis and Protection Module
- Busbars



VB/K

DSM/S 1.1

PS 1/4/6-KNX

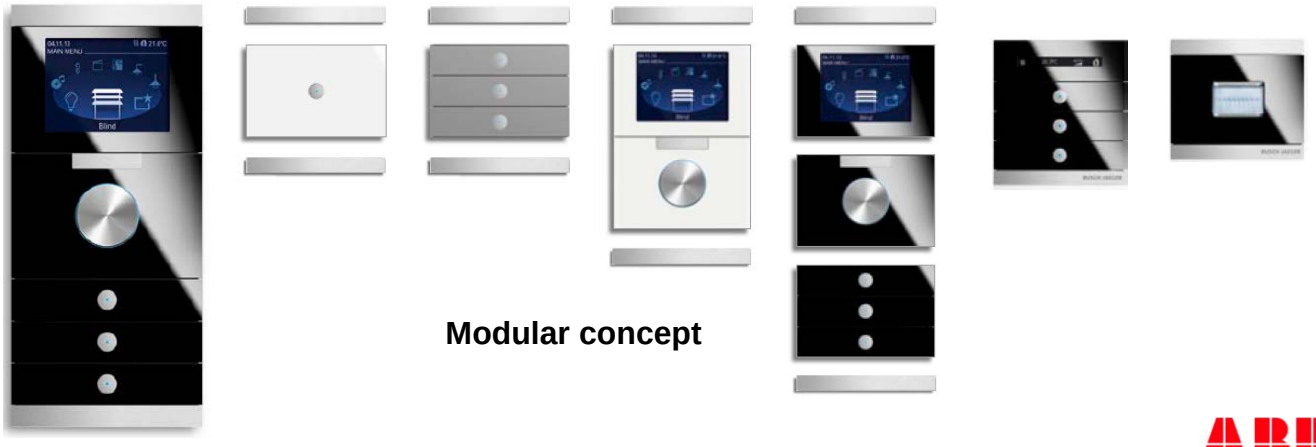


Webinar “ABB i-bus® KNX - Basics and Products“
Operating Elements – Unique diversity of the range

- Control elements, IR interface, movement detector and room temperature controller

Webinar “ABB i-bus® KNX - Basics and Products“
Operation: *priOn*

- Freely programmable multi-function operating element
- Freely programmable 3.5“ TFT colour display with rotary control element for representation of up to 120 functions (integrated weekly time switch, alarm, timer, with light scene function, screensaver and control of multimedia devices)
- Single, triple and rotary control element
- Additional elements: motion detection and top end strip with display, room thermostat, IR receiver



Modular concept

Webinar “ABB i-bus® KNX - Basics and Products“
Presence detector KNX

- Presence detectors units perfectly control not only lighting systems but also heating, ventilation and air-conditioning systems
- Presence detector mini KNX
  - 8m presence detection at 3m installation height
- Presence detector premium KNX
  - 12m presence detection at 3m installation height
- Watchdog Sky KNX
  - 24m detection at 12m installation height
- Watchdog 220 MasterLINE KNX
  - Sensor angle: 220°, range approx. 16 m

Webinar “ABB i-bus® KNX - Basics and Products“
Visualisation, Display and Signalling: Control Panel

- The SMARTtouch (210 functions) offers a colour touch display
- The panels clearly display switch states, error messages and measured values, and allow comfortable operation and setting of timing programs and light scenes
- Acoustic warnings or alarm functions can be programmed
- Design frame: Dark glass with flap in chrome or aluminium, white glass satin finish with flap in aluminium

Webinar “ABB i-bus® KNX - Basics and Products“
Visualisation, Display and Signalling: ***Comfort****Panel*

- Free programmable IP/KNX touch display as a spatially integrated control, infotainment and entertainment center for the whole house
- Simple to use with intuititive navigation concept
- Can be combined with different design frames and design strips made of genuine material
- Representation of individual floor layouts, spatial graphics and operating pages
- 9“ touchdisplay with 800 x 480 pixels
- 12.1“ touchdisplay with 1280 x 800 pixel

Webinar “ABB i-bus® KNX - Basics and Products“
Inputs: Binary Inputs BE/S

- 4- and 8-fold devices
- Input: BE/S x.230.2.1
  0-Signal 0…2 V, 1-Signal 7…265 V AC/DC

  BE/S x.20.2.1
  Scanning Voltage 35 V pulsed
- Input ports: 4-fold: 2 input with common base
  8-fold: 8 independent inputs
- Manual operation button per channel

BE/S 4.230.2.1

BE/S 4.20.2.1

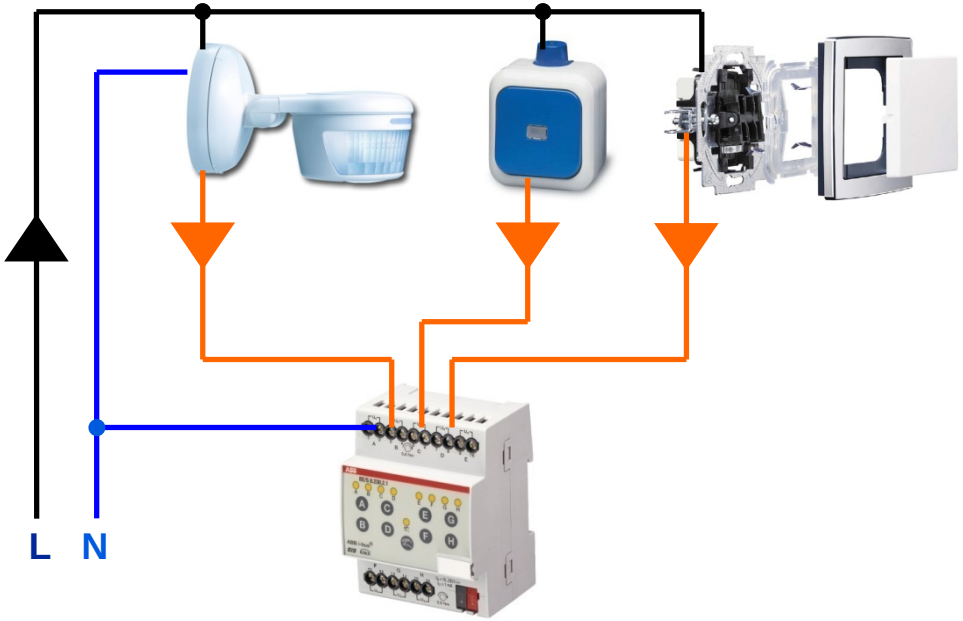
BE/S 8.230.2.1

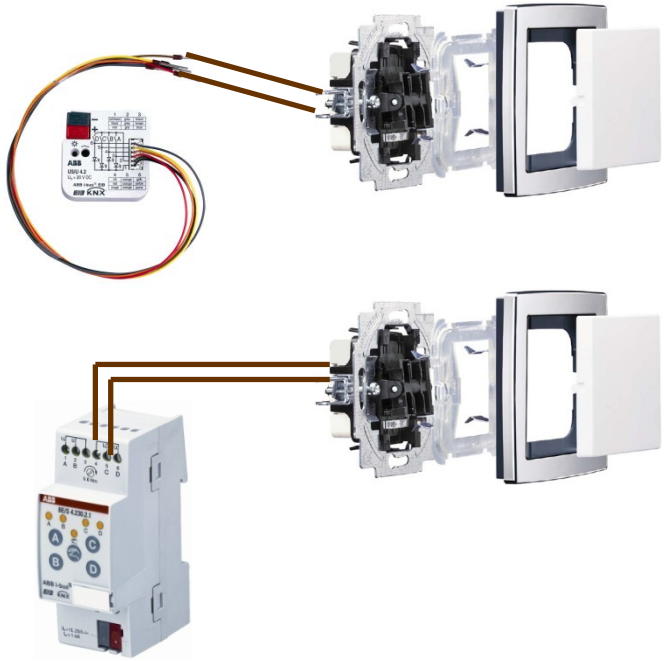
BE/S 8.20.2.1

Webinar “ABB i-bus® KNX - Basics and Products“
Inputs: Binary Inputs BE/S

- Binary Inputs
  0-230V AC/DC
  - Detects AC/DC signals in the voltage range from 0...230 V

- Universal Interface Contact Scanning
- Binary Inputs Contact Scanning
  - Scans floating contacts with internally generated scanning voltage



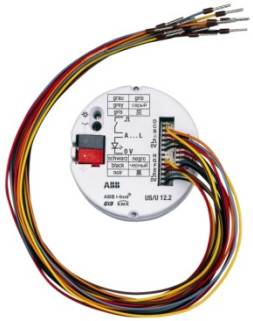


Webinar “ABB i-bus® KNX - Basics and Products“
Inputs: Universal Interface US/U

- 2-, 4- and 12-fold devices
- For the connection of push-buttons or LED’s
- Each channel can be parameterized separately
- For the installation behind operating boards
- Wires, appr. 30cm, can be extended up to 10m
- Channel configured as Input (Scanning voltage 20 V pulsed) or as Output (Output voltage 5 V DC, max. 2 mA)

US/U 2.2

US/U 4.2



US/U 12.2

Webinar “ABB i-bus® KNX - Basics and Products“
Inputs: Analogue Inputs AE/S

- Analogue Input AE/S 4.1.1.3
- Analogue Input AE/A 2.1
- Used wherever analogue variables should be detected
- Comprehensive range of adjustment for many typical sensors (1 – 10 V, 0(4) – 20 mA, 0 – 1 V, PT 100, PT 1000,…) for detection of temperature, brightness, fill levels, etc.

AE/S 4.1.1.3

AE/A 2.1

e.g. for measuring temperatures with PT 100 sensors

Webinar “ABB i-bus® KNX - Basics and Products“
Inputs: Weather

- Weather Sensor WES/A 3.1 and Weather Unit WZ/S 1.3.1.2
  - It supplies data for twilight and brightness, levels in 3 directions, rain, temperature, information on day/night, wind speed, date and time (via GPS)
- Weather Station WS/S 4.1.1.2
  - To connect all common weather sensors for brightness, rain, wind speed/direction, light intensity, pyranometers, …

WES/A 3.1

+

WZ/S 1.3.1.2

WS/S 4.1.1.2

+

Webinar “ABB i-bus® KNX - Basics and Products“
Outputs: Switch Actuator SA/S

- Switching of different electrical loads in a KNX system
- Widest and most variable Switch Actuator range:
  6A - 20A; 2 - 12 outputs
- For inductive, capacitive loads and fluorescent lamps (AC1, AC3, AX)
- Current detection (Accuracy 20mA +/- 2% of the measuring value)
- Manual operation

SA/S 2.16.6.1

16/20 AX- C-Load

SA/S 4.6.1.1

6 A AC3 AX loads

SA/S 8.16.6.1

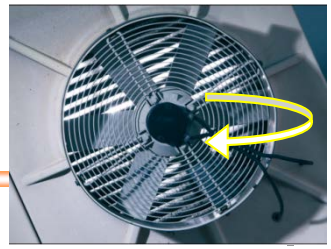
16/20 AX, C-Load

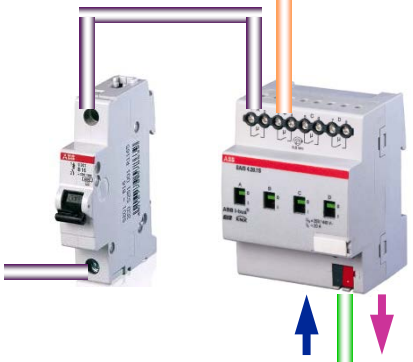
SA/S 12.16.6.1

16/20 AX , C-Load

Webinar “ABB i-bus® KNX - Basics and Products“
Outputs: Switch Actuator SA/S – Current detection

Current consumption blower: I_N 12,5 A





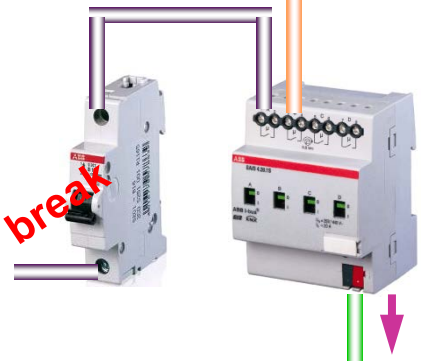
ETS-Paramter:
Current threshold: 12,0 A
Send „1“ at crossing lower

Status Switch: „*On*“
Current value: „*12.500*“ *mA*

ON

Webinar “ABB i-bus® KNX - Basics and Products“
Outputs: Switch Actuator SA/S – Current detection

Current consumption blower: I_N 12,5 A



ETS-Paramter:
Current threshold: 12,0 A
Send „1“ at crossing lower
→ Alarm message, e. g. siren or panel

Current value*: „0“ mA*
Status current threshold : *„1“*

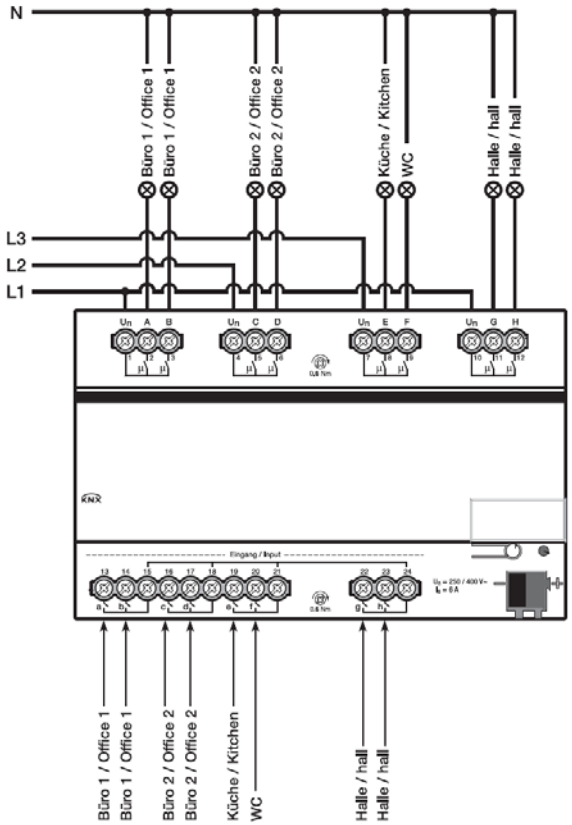
Webinar “ABB i-bus® KNX - Basics and Products“
Inputs and Outputs: I/O-Actuator IO/S

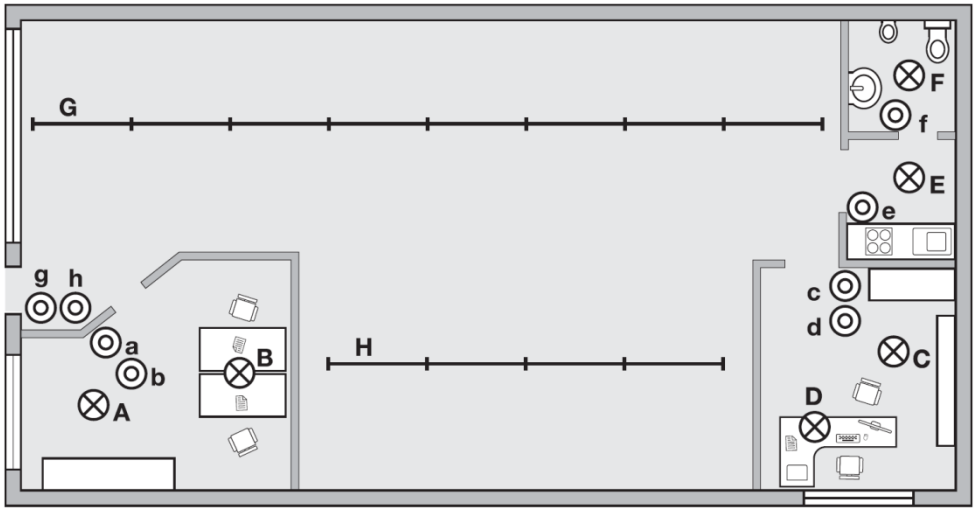
- The device specially designed for purpose-built and industrial buildings, small commercial businesses and similar building structures
- The IO/S x.6.1.1 features outputs for control of lighting circuits
  - IO/S 8.6.1.1: 8 x switch outputs 6 A and 8 x binary inputs
  - IO/S 4.6.1.1: 4 x switch outputs 6 A and 4 x binary inputs
- The binary inputs can be programmed as pure KNX devices and/or internally linked with the outputs
  → no group addresses necessary: „internal“ wiring
- Any project, planned the conventional way, is now a project for an I/O-Actuator

IO/S 8.6.1.1

IO/S 4.6.1.1

Webinar “ABB i-bus® KNX - Basics and Products“
Inputs and Outputs: I/O-Actuator IO/S



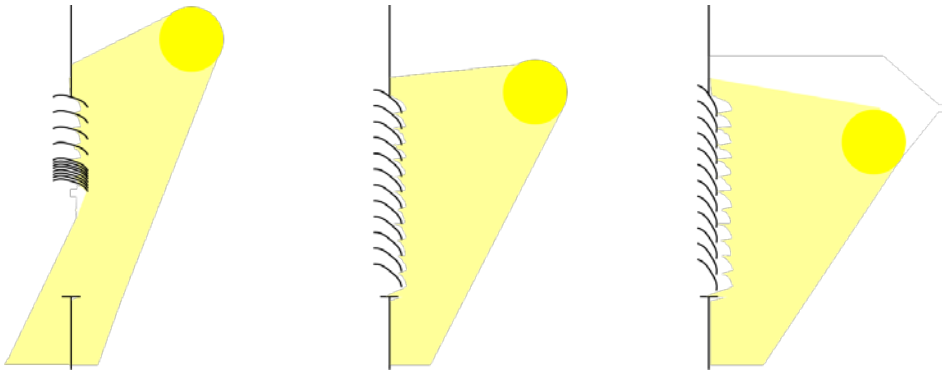


Webinar “ABB i-bus® KNX - Basics and Products“
Shutters and Sun Protection: Shutter Actuator JRA/S

- For controlling 2, 4 or 8 independent groups for shutter or sunblind drives with the functions Up/Down, Step/Stop, Move to position
- Automatic travel detection
- Climatic control of rooms is supported by sun protection and heating/cooling automatic control
- Direct manual operation on the device
- For 230V-, 24V and SMI-drives

Webinar “ABB i-bus® KNX - Basics and Products“
Shutters and Sun Protection: Shutter Control

- Controls shutter and blind actuators according to the position of the sun
- The shutter control unit contains the functions of anti-glare protection and daylight redirection for up to 4 facades
- Automatic shading can be implemented for every building and climatic control can be supported by the comprehensive range of parameter settings



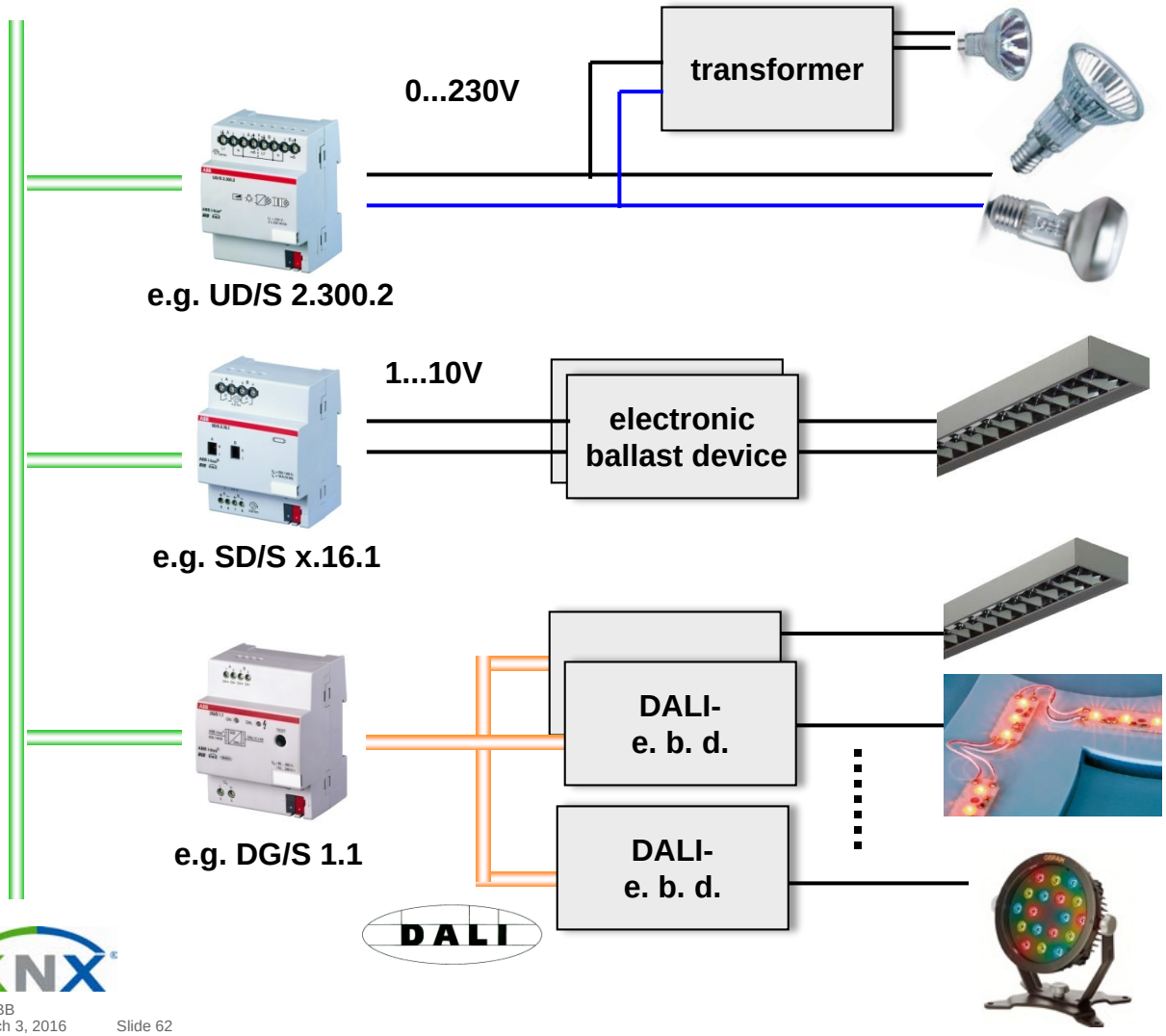
Anti-glare protection

- Protection against direct, dazzling daylight
- Maximum use of diffuse daylight

Daylight redirection

- Protection against direct, dazzling daylight
- Defined direction of daylight into the room

Webinar “ABB i-bus® KNX - Basics and Products“
Illumination: Overview



- Low-voltage halogen lamps which are powered by wound or electronic transformers
- Halogen lamps
- Incandescent lamps

- Fluorescent lighting

- Electronic ballast device
- Transformer
- Dim actuator
- Switch actuator
- LED-converter

Webinar “ABB i-bus® KNX - Basics and Products“
Illumination: Dim Actuator

- For switching and dimming of incandescent lamps, 230 V halogen lamps or low-voltage halogen lamps which are powered by wound or electronic transformers (automatic load detection)
- Parallel switching of 2, 3 or all channels
  2x 300 VA or 1x 500 VA; 4x 210VA to 1x 840VA; 4x 315VA to 1x 1260VA, …
- Multi phase operation – each channel can work on his own phase

2 x 300 VA

4 x 210 VA

4 x 315 VA

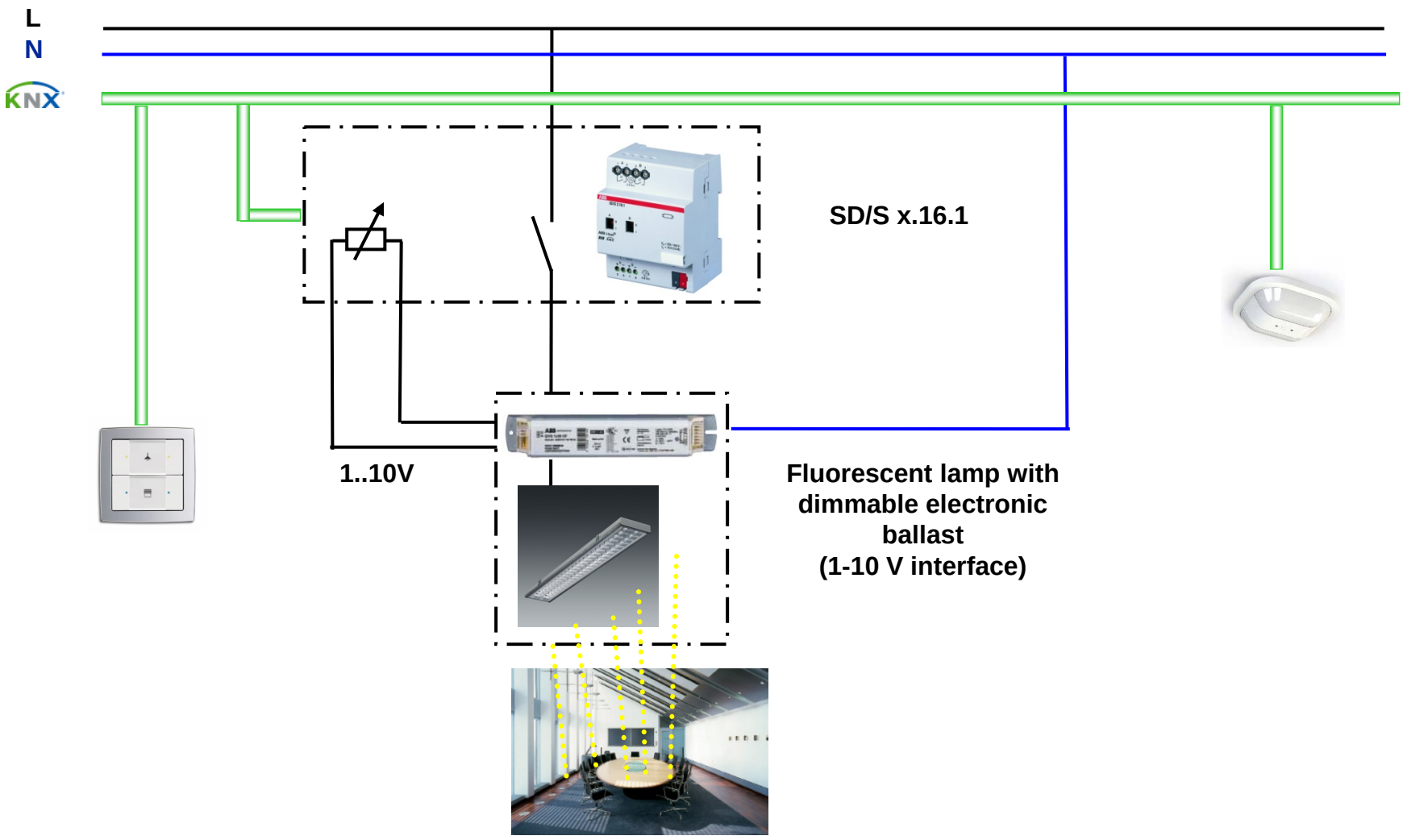
4 x 600 VA

6 x 315 VA

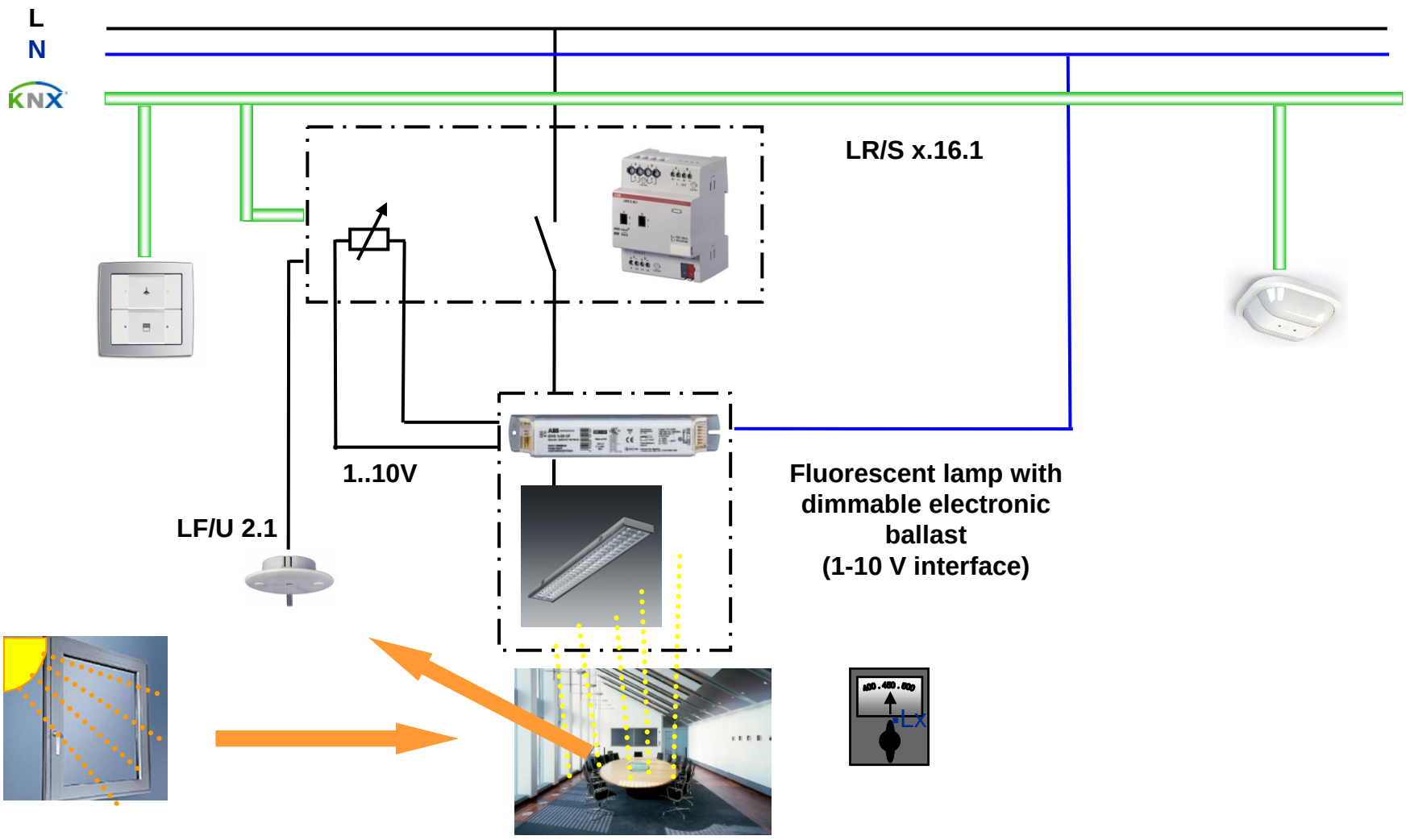
1 x 1,260 VA

1 x 2,400 VA

Webinar “ABB i-bus® KNX - Basics and Products“
Illumination: Switch/Dim Actuator SD/S



Webinar “ABB i-bus® KNX - Basics and Products“
Illumination: Light Controller and light sensor



Webinar “ABB i-bus® KNX - Basics and Products“
Illumination: DALI Gateways





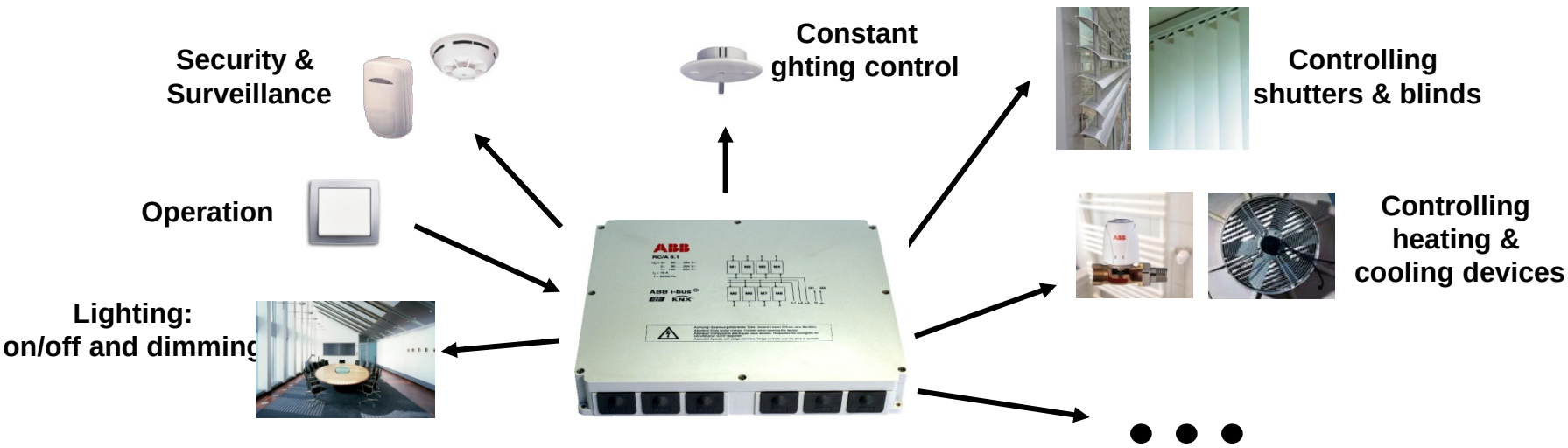
max. 64 DALI devices (=slaves)
e.g. ebds, dimmer, transformers, RGB converter, …

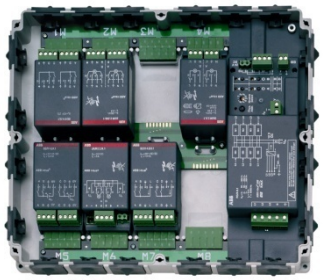
DALI-Gateways:

DG/S 1.1
DG/S 1.16.1 (group)
DG/S 8.1
DGN/S 1.16.1 (EL)
DLR/S 8.16.1M
DLR/A 4.8.1

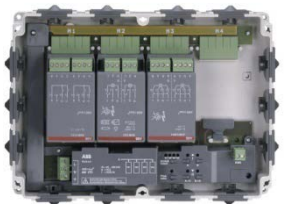
Operation

Webinar “ABB i-bus® KNX - Basics and Products“
Room Automation: Room Controller RC/A

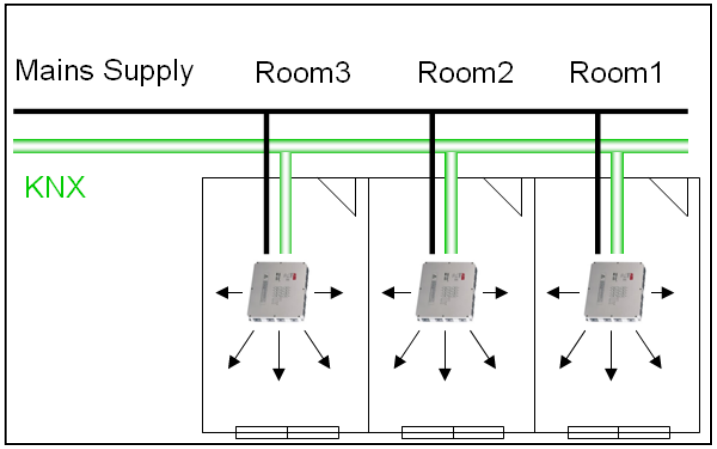




Basis device RC/A (4 or 8 modules)



Module(s)



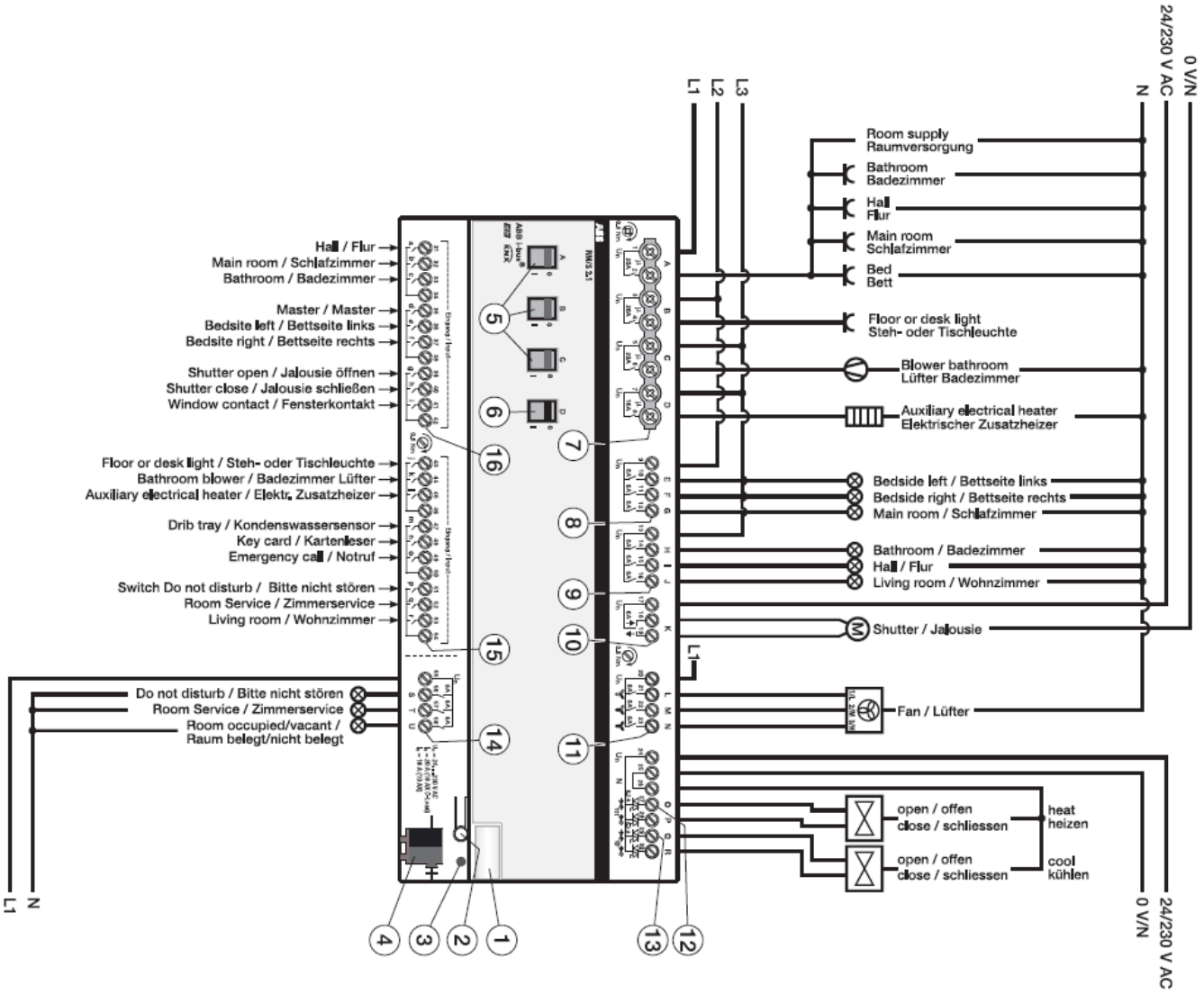
Webinar “ABB i-bus® KNX - Basics and Products“
Room Automation: Room Master RM/S 2.1 and 1.1

- Main Approach:
  - Hotel Rooms
  - Assisted Living / Rooms in Hospitals
  - Small Apartments
- Preparametrised Functions
- Room Solution, one Device for all Functions
- Use any conventional Push Button or KNX-Device for Operation

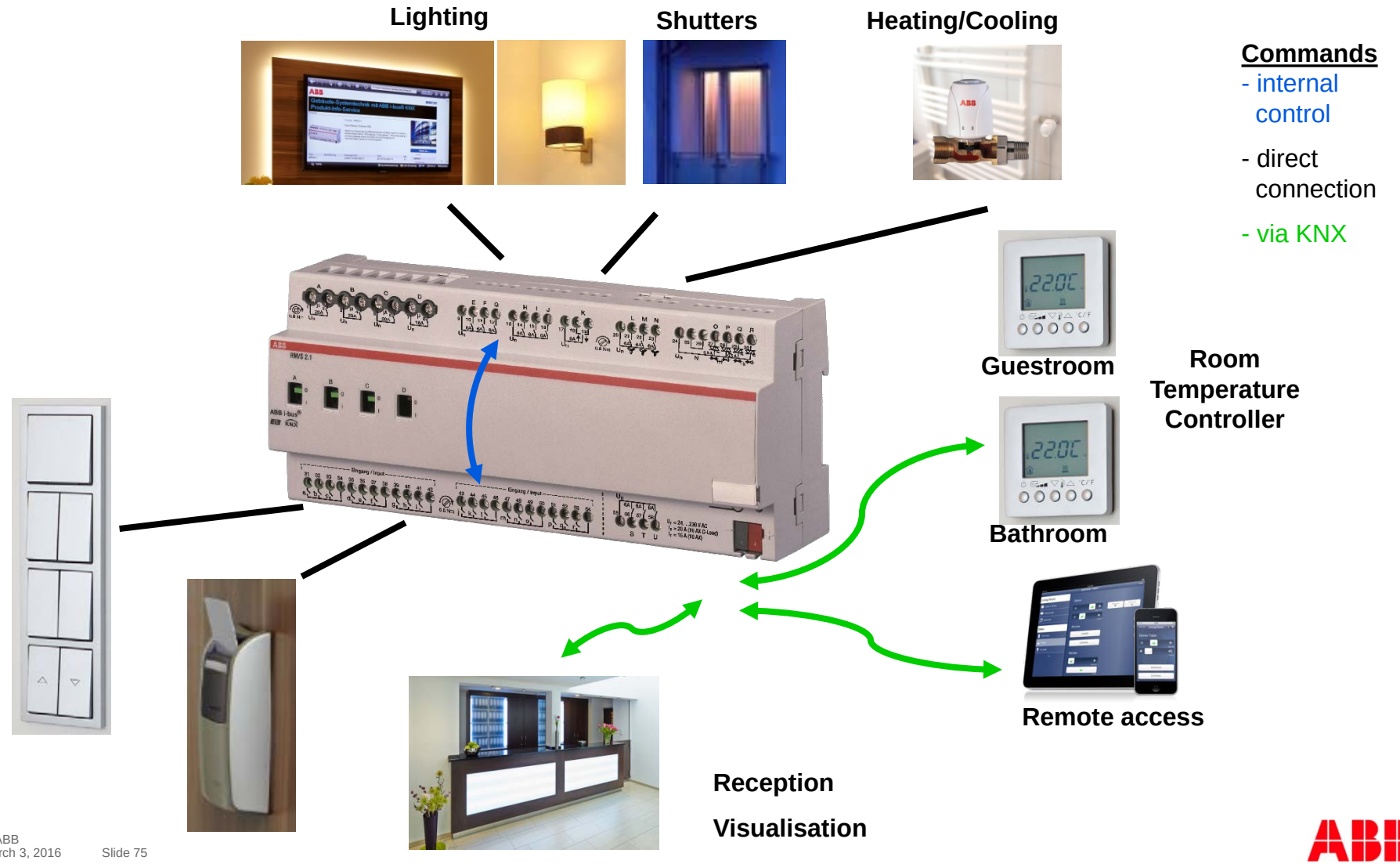
Room Master, Premium
RM/S 2.1

Room Master, Basic
RM/S 1.1

Webinar “ABB i-bus® KNX - Basics and Products“
Room Automation: Room Master RM/S 2.1



Webinar “ABB i-bus® KNX - Basics and Products“
Room Automation in Hotel “Neu Heidelberg”

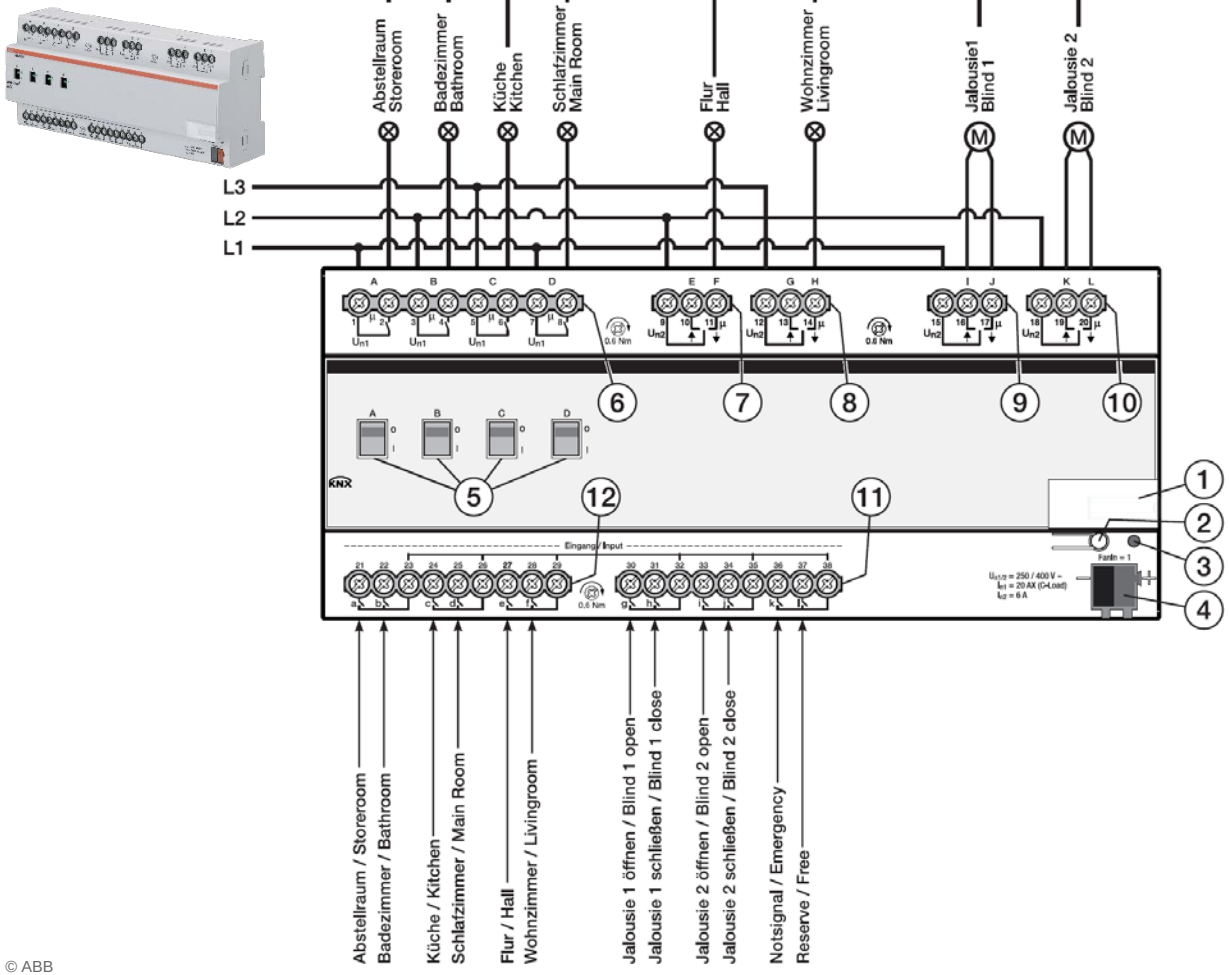


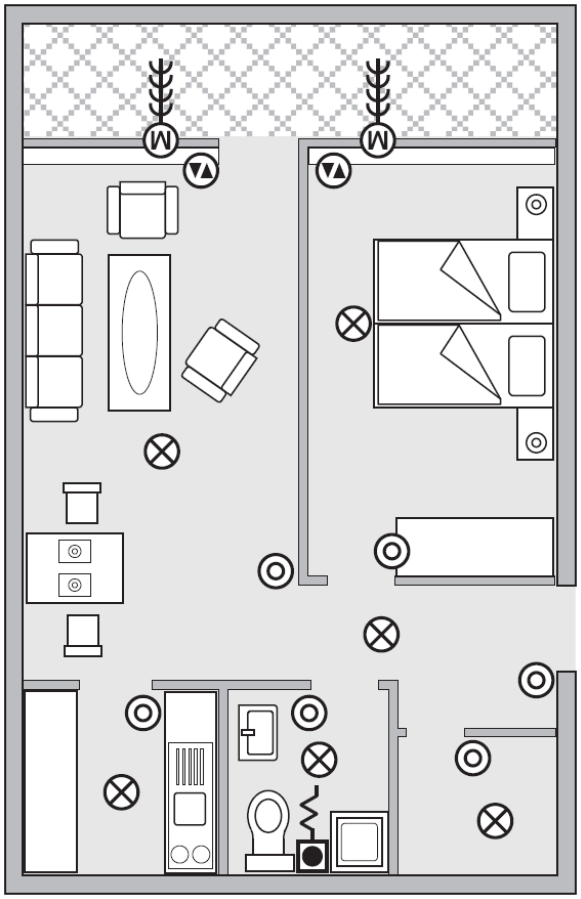
Webinar “ABB i-bus® KNX - Basics and Products“
Room Automation: Room Master RM/S 3.1 and 4.1

- The Room Master RM/S 3.1 and 4.1 is used as a single room solution
- The RM/S 3.1 is used to control the lighting as well as the blinds and socket outlets
  - 4 x switching outputs 20 AX
  - 4 x shutter/blind outputs 6 A
  - 12 x binary inputs contact scanning

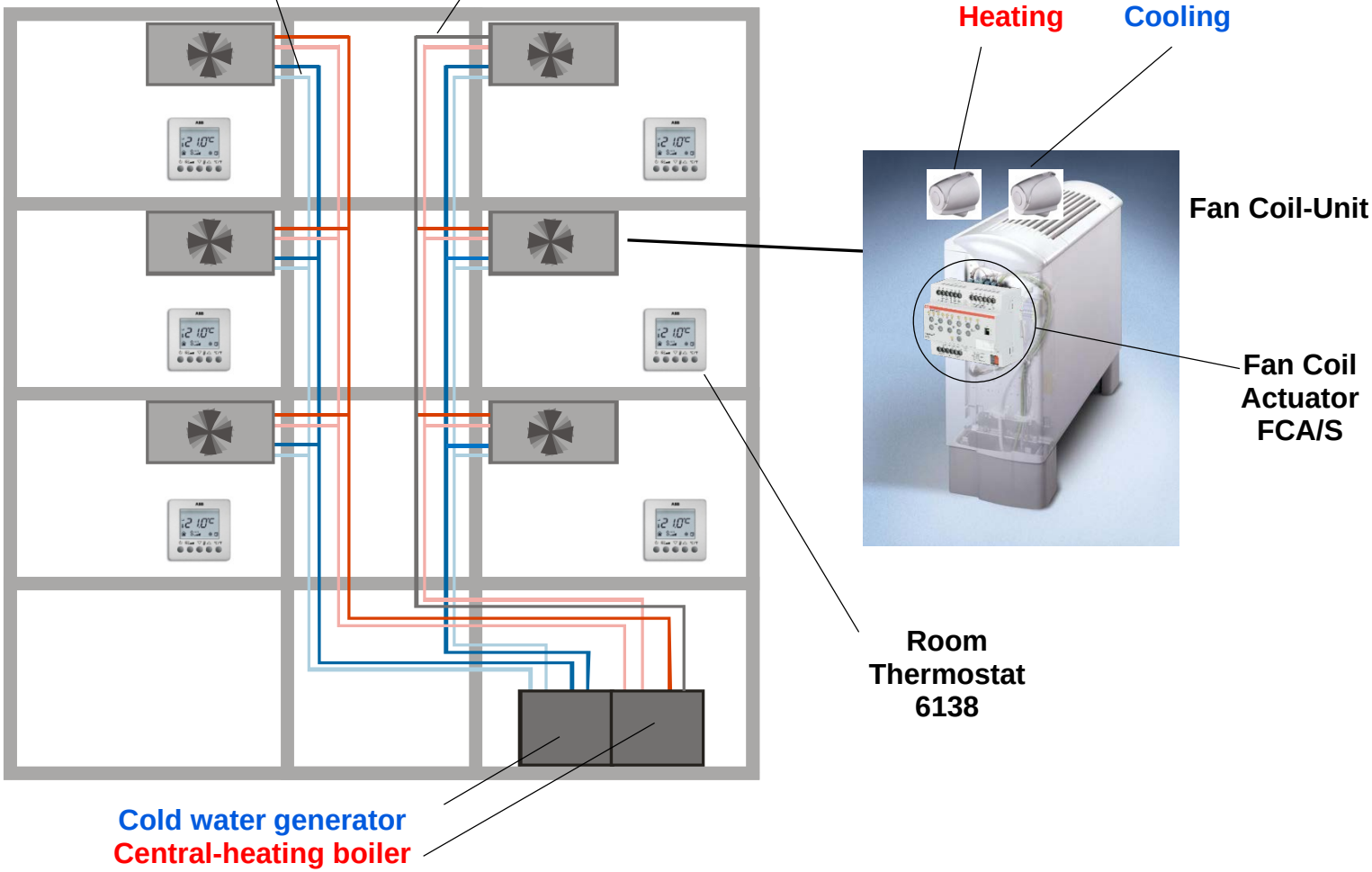
- The RM/S 4.1 is used to control the lighting
  - 8 x switching outputs 6 A
  - 8 x binary inputs contact scanning
- The input signals are detected via binary inputs or directly via the sensors connected to the KNX
- Preconfigured ETS applications as novice services

Webinar “ABB i-bus® KNX - Basics and Products“
Room Automation: Room Master RM/S 3.1

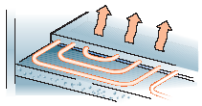




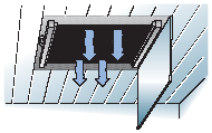
Webinar “ABB i-bus® KNX - Basics and Products“
Heating and Cooling: Overview



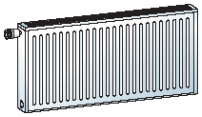
Webinar “ABB i-bus® KNX - Basics and Products“
Heating and Cooling



Floor Heating



Cooling Ceilings



Radiators

Electromotor valve drives (3-point)

Thermoelectric valve drives

24…230 V AC/DC

ES/S x.1.2.1

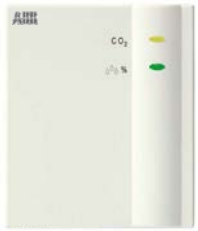
Room Thermostat

Electromotor Valve Drive ST/K

Presence detector

Webinar “ABB i-bus® KNX - Basics and Products“
Heating and Cooling: Room Thermostat

- Room Thermostat sends control values for the room to the Fan Coil Actuators or devices with the respective outputs (e.g. Room Master)
  - Room Thermostat Fan Coil with Display
  - Room Thermostat future/solo
  - Triton Control Element with Room Thermostat
  - priOn with Room Thermostat
- Air Quality Sensor LGS/A 1.1
  - To multiplex measurement to the CO_2-concentration, the air-humidity and the temperature

Webinar “ABB i-bus® KNX - Basics and Products“
Heating and Cooling: Valve drive control

- Electromotor Valve Drive ST/K 1.1
  - For controlling radiator valves via KNX
  - Installation on radiator valve and supplied via KNX

- Electrothermal Valve Drives TSA/K 230.2 (230V) and TSA/K 24.2 (24V)
  - For opening and closing valves in heating, ventilation and air-conditioning systems

- Electronic Switch Actuator ES/S x.1.2.1
  - 4 or 8 channels for the noiseless control of heating or cooling systems via thermoelectric or electromotor valve drives

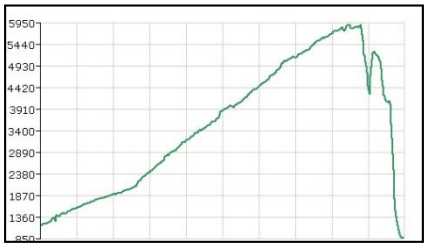
- Valve Drive Actuator VAA/S x.230.2.1
  - Connection of thermoelectric valve drives (e.g. TSA/K)
  - 6 or 12 semiconductor outputs

Webinar “ABB i-bus® KNX - Basics and Products“
Heating and Cooling: Blower/Fan Coil Actuator FCL/S

- FCL/S 1.6.1.1 controls
  - A single-phase fan with up to three fan speeds
  - Additional switching output
- The FCL/S 2.6.1.1
  - Controls two independent fans with up to three fan speeds
  - Alternatively the second fan output can be used as three switch outputs
  - Two additional switching outputs

FCL/S 1.6.1.1

FCL/S 2.6.1.1



CO_2-concentration (ppm)

Webinar “ABB i-bus® KNX - Basics and Products“
Heating and Cooling: Fan Coil Actuator FCA/S

FCA/S 1.1.1.2

FCA/S 1.1.2.2

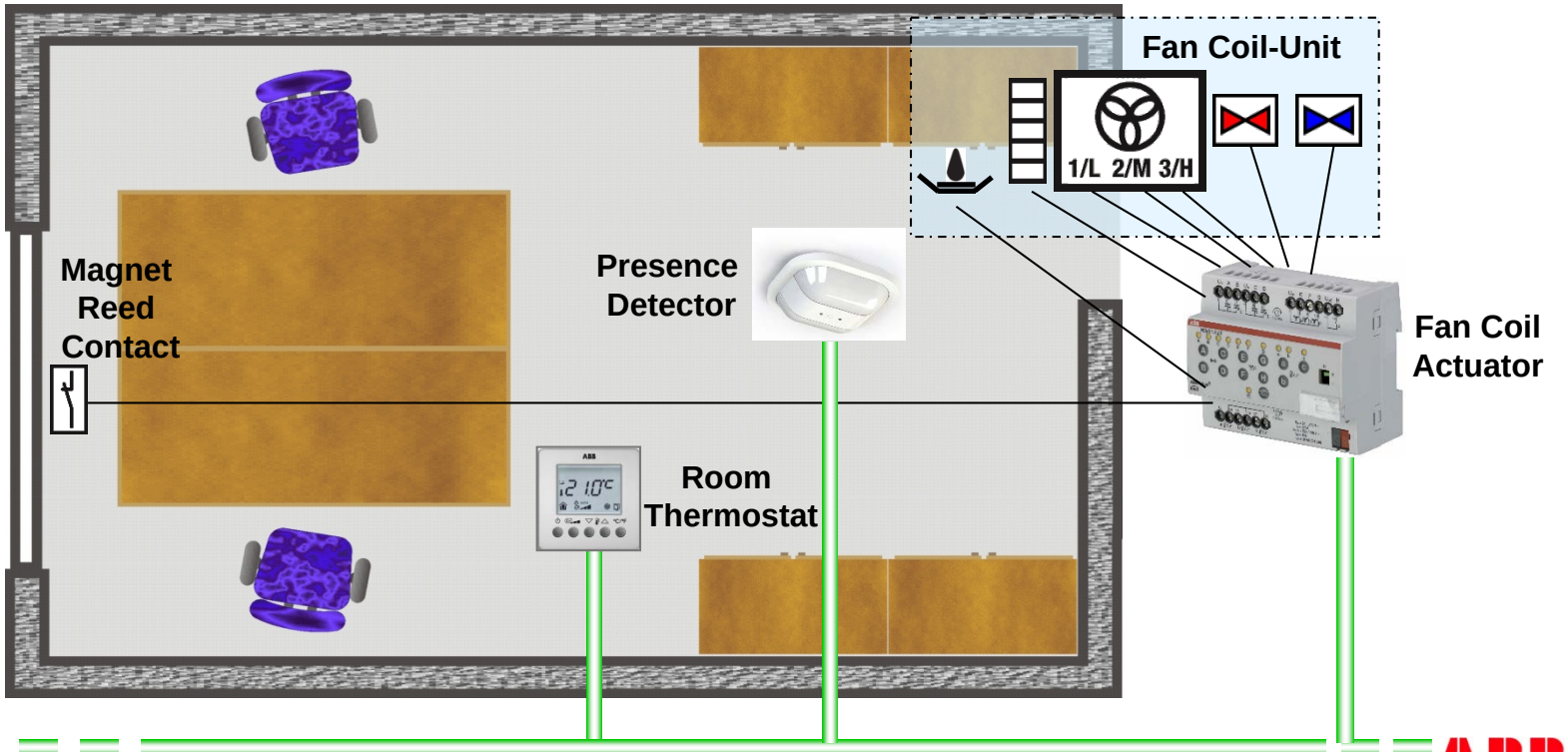
FCA/S 1.2.1.2

FCA/S 1.2.2.2

- For the control of typical blower convectors via
  - 2 electronic outputs for electro thermal or motor-driven valve drives
  - 2 valve outputs 0…10 V
- 3 outputs for individual fan speeds
- An additional load output switches an additional load (up to 16 A), such as auxiliary heating
- 3 inputs for potential free contacts (e.g. window contact, condensed water signal) and analogue values

Webinar “ABB i-bus® KNX - Basics and Products“
Heating and Cooling: Fan Coil Actuator Solution Office

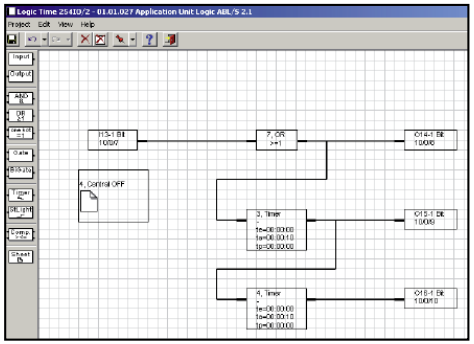
- Fan Coil-Unit with drip tray, auxilliary heater, 3-speed fan, motor power operated heating and cooling valves
- Switching between the operating modes in the room thermostat e.g. time switch, presence detector



Webinar “ABB i-bus® KNX - Basics and Products“
Control, Logic and Time: Application Unit

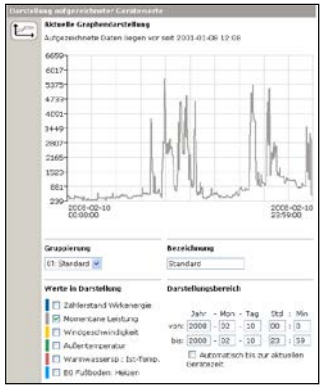
- Application Unit/Logic ABL/S 2.1
  - Allows the compilation of complex logical functions by simply combining different logic elements and gates using a graphical user interface as an ETS plug-in
- Application Unit/Time ABZ/S 2.1
  - It provides a yearly time clock program with 15 daily routines (800 switching events), a weekly schedule
  - The switching times can be modified with the free PZM 2.0 software without using ETS

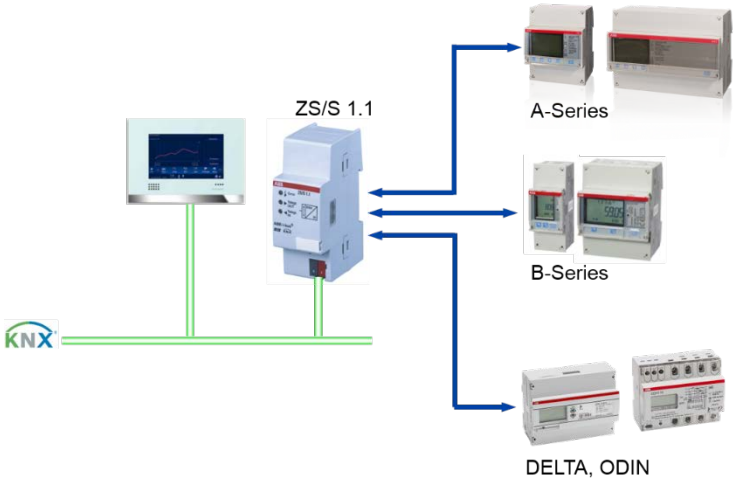
ABL/S
ABZ/S



Webinar “ABB i-bus® KNX - Basics and Products“
Energy Management: Meter Interface Module ZS/S

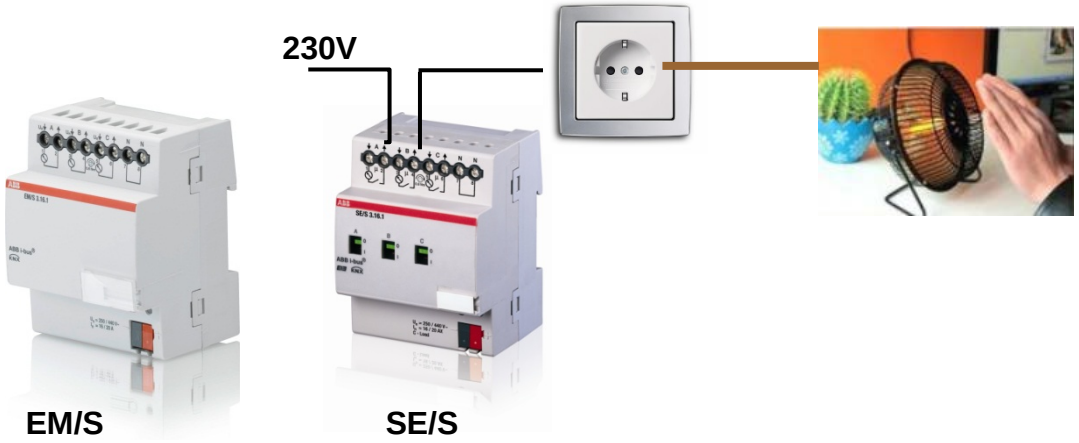
- The Meter Interface Module ZS/S enables remote reading of meter data and meter values from ABB energy meters from the A series, B series, DELTA and ODIN
- Quick and easy installation
- Automatic assembling of IR-communication with monitoring
- No approvals required
- Provide meter data for visualization, billing, energy optimizing…





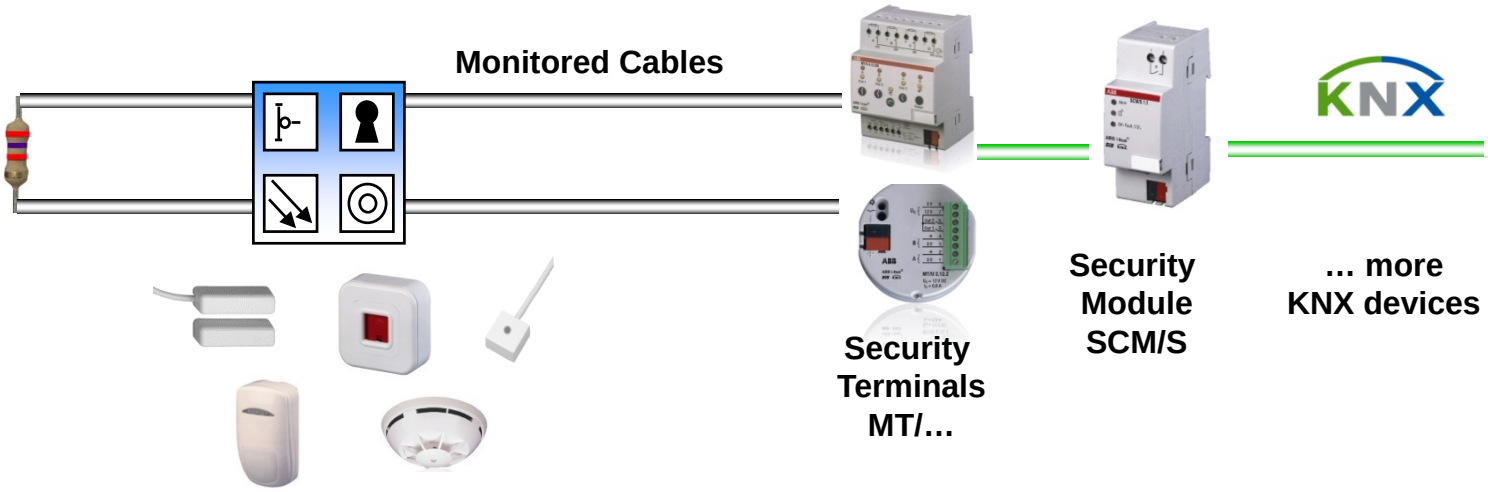
Webinar “ABB i-bus® KNX - Basics and Products“
Energy Management: Energy Actuator SE/S and Energy Module EM/S

- The ABB i-bus® KNX Energy Actuator SE/S and Energy Module EM/S offers solutions for tomorrow's intelligent buildings
- Measures energy consumption in the terminal current circuit
- Various electrical values can be monitored
- Peak loads can be limited through a simple load control
- The functionality of the existing ABB i-bus® KNX switch actuators is included (only SE/S)
- Flexible „Intermediate Meters“ are available (one per output and total)



Webinar “ABB i-bus® KNX - Basics and Products“
Security and Surveillance: Security Products

- It is possible to implement a variety of tasks from basic monitoring functions to professional security installations in conjunction with ABB i-bus® KNX
- Typical applications range from simple functions, e.g., opening surveillance or lock monitoring of doors and windows, reporting fractures in water pipes or the early detection of smoke to installations in buildings with VdS requirements (class A, B or C)



Webinar “ABB i-bus® KNX - Basics and Products“
Security and Surveillance: Security Terminals

- Security Terminal, 8-fold, MT/S 8.12.2M
- Security Terminal, 4-fold, MT/S 4.12.2M
- Security Terminal, 2-fold, MT/U 2.12.2
- Operation
  - Stand-alone security system
  - With security module SCM/S or KNX Security Panel GM/A
- For the monitored connection of passive detectors such as magnetic contacts, passive infrared detectors or glass-breakage sensors
- Every input is monitored for interruption and tampering (eol resistor)
- Direct connection of signalling devices
- Simultaneous using of security sensors to support heating and cooling

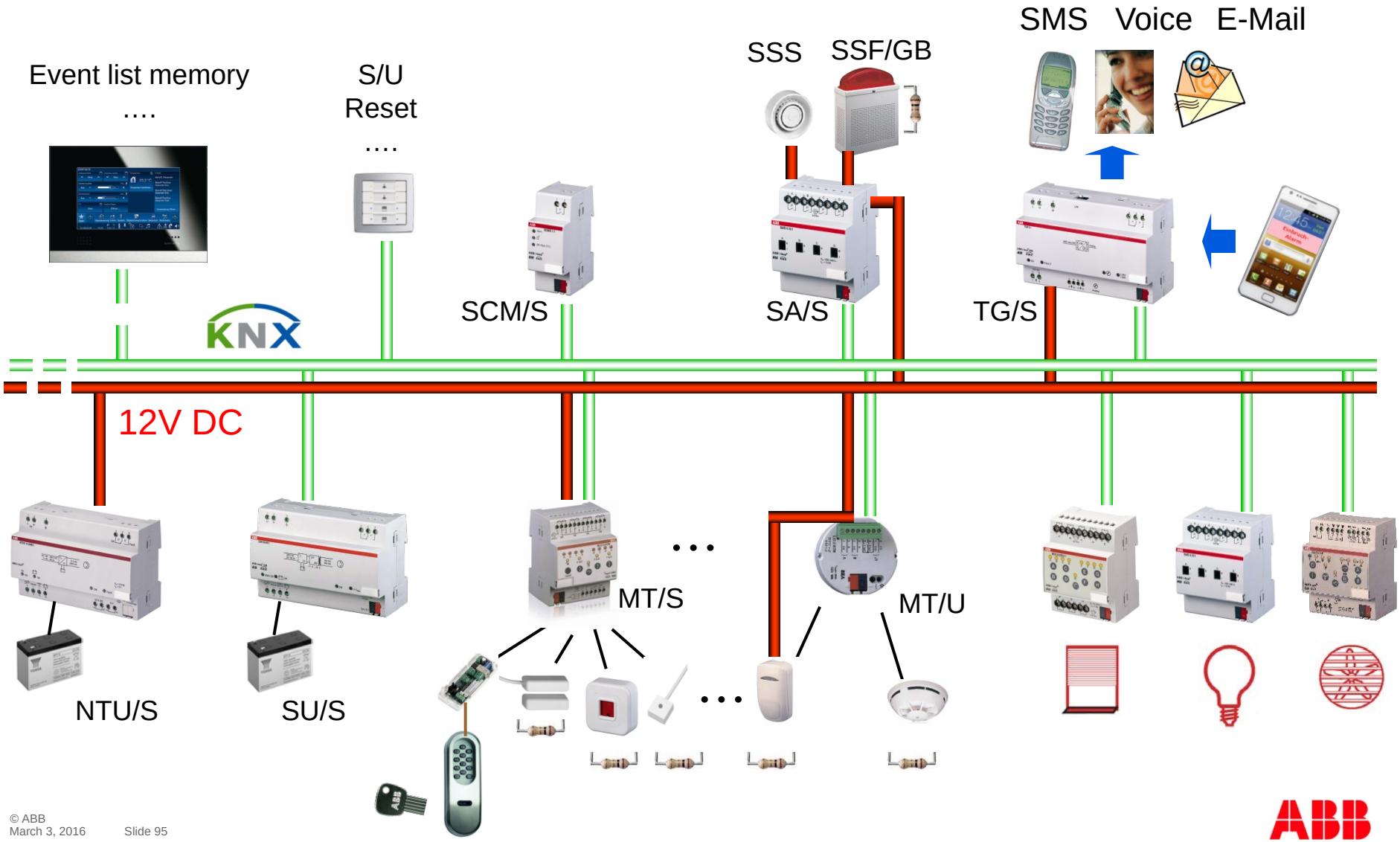
Webinar “ABB i-bus® KNX - Basics and Products“
Security and Surveillance: Security Module

- The Security Module SCM/S provides the necessary logic functions to link the various KNX devices (e.g. zone terminals) to a security system
- Up to 64 different zones can be evaluated via communication objects
- Arming, operation and display are also implemented using communication objects

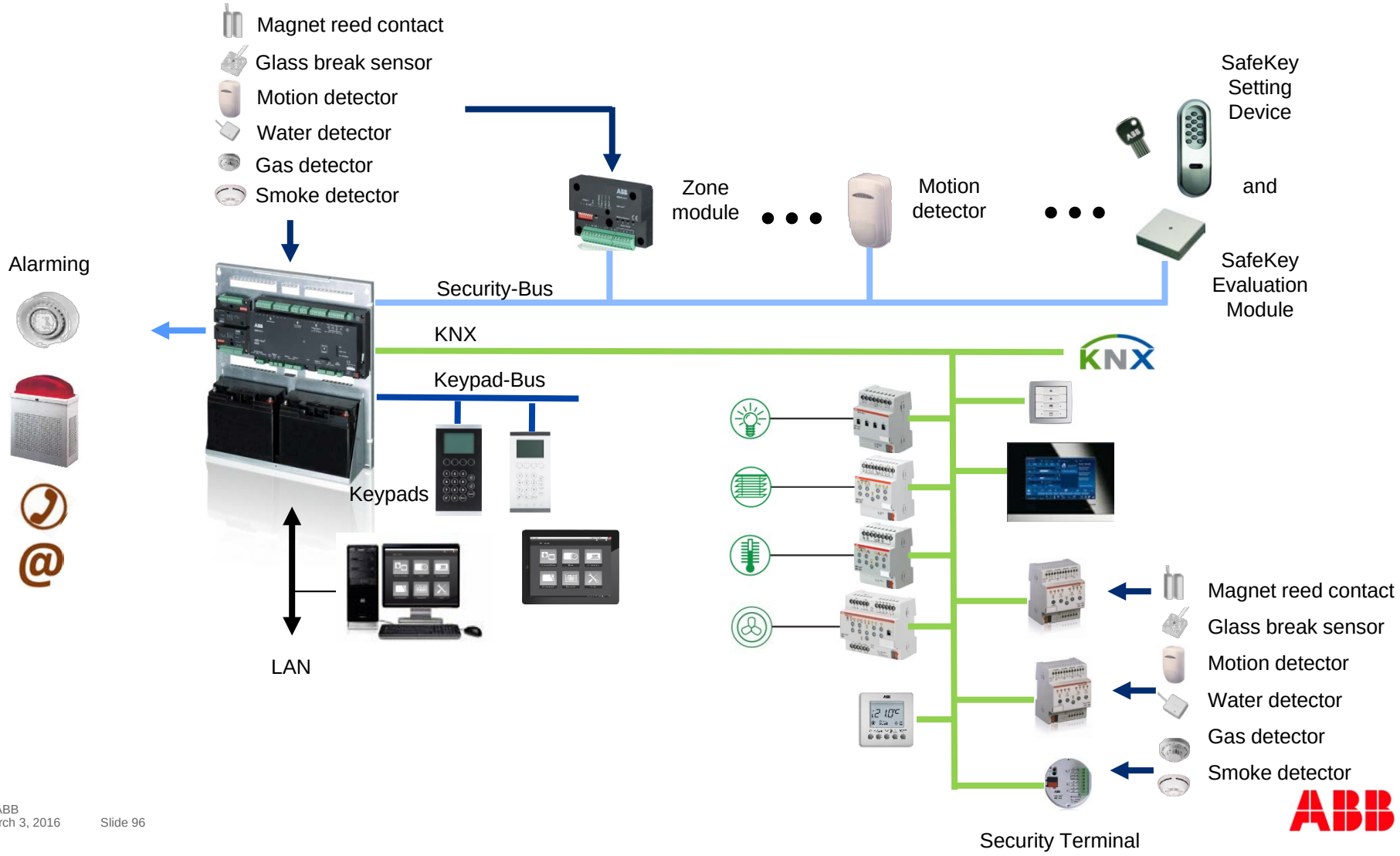
SCM/S 1.1

Webinar “ABB i-bus® KNX - Basics and Products“

Security and Surveillance: Overview



Webinar “ABB i-bus® KNX - Basics and Products“
Security and Surveillance: KNX Security Panel GM/A



Webinar “ABB i-bus® KNX - Basics and Products“
Next webinar

- **Wednesday 30th of March 2016**
  - Morning 09:00 am Europe Time (Berlin, UTC + 2h)
  - Afternoon 03:00 pm Europe Time (Berlin, UTC + 2h)
- **News Light & Building 2016**
  - …
  - …
  - …

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