News Light + Building 2018
Webinar – Competence Center Europe – Building Automation

Ilija Zivadinovic, Martin Wichary, Juergen Schilder, Thorsten Reibel
Agenda

ClimaECO - complete HVAC solution based on KNX
ClimaECO sensors - new range of KNX sensors
KNX LED-Dimmer - optimized for Retrofit LED
ABB-tacteo® KNX - Individually configurable sensors with glass
Busch-VoiceControl® KNX - controlling your home by voice
ABB-secure@home - wireless security system with free@home connection
IP-Router Secure - secured communication on KNXnet/IP
EQmatic Energy Analyzer Modbus
ABB safe@smart App for KNX Security Panel
ClimaECO

ABB i-bus® KNX HVAC Solutions

HVAC Segments

- Holistic Solution from Central HVAC (Energy Generation and Distribution) to Room Automation (Energy Consumption) with controlling (Management and Automation) to run the Building economically
ClimaECO
ABB i-bus® KNX HVAC Solutions

Management & Automation

Central HVAC Automation
- Heating/Cooling Circuit Controllers (HCC/S)
- Boiler/Chiller Interface (BCI/S)
- Building Automation Controller KNX (BAC/S)

HVAC Room Automation
- Application Controllers (AC/S)

User Operation

Controllers
- ClimaECO sensors (SBS/U)
- Room Control Units (SAR/A)
- Fan Coil Controllers (FCC/S)
- Valve Drive Controllers (VC/S)
- Split Unit Gateway (SUG/U)
- Air quality sensor (LGS/A)

Availability: July – October 2018

A holistic HVAC Building Automation System
ClimaECO

Principle Heating with Radiator

Management
- BACnet
- Application Controller AC/S 1.x.1

Generation
- Boiler

Distribution
- Setpoint Valve 0-10 V, Pump on/off, Status, Flow and return flow temp.
- To further distribution circuits

Consumption
- Conventional RCU* or KNX RTC*
- Radiator

Optional: Building Automation Controller KNX for superior tasks

Automation functions, Control of BC/I and HCC/S, Programmable logic, Communication to Management level

* Room Control Unit
* Room Temperature Controller
Principle Cooling with Fan Coil Unit

Management

- BACnet
- Automation functions, Control of BC/I and HCC/S, Programmatic, Communication to Management level
- Application Controller AC/S 1.x.1
- Optional Building Automation Controller KNX for superior tasks

Generation

- Chiller

Distribution

- Setpoint Valve 0-10V, Pump on/off, Status, Failure, Flow and return flow temp.
- To further distribution circuits

Consumption

- Conventional RCU* or KNXRTC*
- Fan Coil Unit
- Fan Coil Unit

Optional:

- Building Automation Controller KNX for superior tasks
- WebUI
- Communication to Management level

- Automation Modules
- Programmable logic

©ABB
May 17, 2018
| Slide 6
An entire range of KNX room operation units optimized for commercial applications
- Variants with Air Quality Sensor
- Can be flush or surface mounted
- No additional power supply required

Simple, cost efficient Room Temperature Control Units connected directly to FCC/S Fan Coil or VC/S Valve Controllers
- No power supply required
- Easy installation / no commissioning
- Optimal price / performance
Simple integration of Air Conditioning Split Units into KNX installations via emulation of infrared remote control signals
- Pre-programmed with the IR control codes of major split unit manufacturers
- Compact format for simple installation

Control of the complete spectrum of Fan Coil Units
- Successor to the FCA/S series.
- With integrated Room Temperature Controller
- Support of variable 0-10V fans
- Support of 6-way valves

Valve control for radiator, floor heating and cooling ceiling applications
- With integrated Room Temperature Controller
- Integrated inputs for sensors
- In addition to VAA/S product range
Measuring of room temperature, CO2 concentration and humidity

- With integrated Room Temperature Controller
- Indication of CO2 and relative humidity level via LED
- Integrated dew point calculation
Control of distribution circuits for heating or cooling based on the room demand.
- For 3-point or 0-10V valve drives
- Support for double-pumps
- Inputs for all required sensors

For interfacing to the controllers of self-contained boilers or chillers to monitor and control them.
- Interfacing by standard analogue signals
- Pump switching
- Also support for heat pumps

Advanced freely-programmable KNX Building Automation Controller
- Easy creation and reuse of automation software by IEC 61131-3 programming languages in ABB Automation Builder based on established Codesys Software
- Seamless integrated in KNX and ETS
- Modular extension of In-/Outputs
Run predefined Automation Modules for a holistic HVAC Automation Solution from Central HVAC to Room. For example Heat Demand Calculation, Schedules and Trends Logs. With WebUI for Operation

- Own Automation Modules can be created by a graphical Logic Editor
- Variant with embedded KNX-BACnet Gateway for integration of KNX into BACnet Systems
ClimaECO

Application Controller

Web User Interface
Created automatically (Good design and user friendliness)

Automation Functions
1. Pre-defined functions (ASM)
2. Freely programmable Automation Functions (like ABA/S)

KNX
Based on the open and worldwide Standard

BACnet
Integrated BACnet Gateway (no configuration required)
ClimaECO

Application Controller and WebUI
ClimaECO

ClimaECO as part of ABB i-bus® KNX portfolio

ClimaECO: established portfolio
HVAC and user operation

- Valve Drive Actuator
- Blower Actuator
- Thermoelectric valve drive
- Electro motoric valve drive
- Analog Outputs
- Analog Inputs
- User operation: e.g. Prion, Solo etc.

Presence detection, Lighting and switching

- Presence detectors
- Dali Gateways
- Dimmer Actuators
- Switch Actuators

Weather sensor, Logic and Room automation

- Logic Controller
- Time receiver GPS
- Time switch
- Room Controller
- Room Master
- Weather station/sensor
New Range of KNX sensors

Introduction

- New range of push button sensors and room temperature controller created together with the project ClimaECO
- Complete product range:
  - Control element 8-fold and 12-fold with integrated temperature sensor
  - Control element with RTC slave 6- and 10-fold
  - Control element with RTC 6- and 10-fold
  - Control element with RTC 6- and 10-fold plus CO₂ and humidity sensor
- User friendly with a good User Interface-design for the devices with display
- Labelling with icons and/or text via a web-tool by the customer himself
- All devices with a mechanical anti-theft protection
ClimaECO sensors

New Range of KNX sensors

Introduction

- Installation in every country in the world (VDE, BS, NEMA, Australian brackets, etc.)
- ClimaECO sensors can be installed/mounted in a flush mounted box or separate surface mounted box
- Unified RTC concept
- Available in studio white (-84)
- Native ETS application for ETS4 and ETS5
- Values and icons are shown on a white illuminated display
- Status LED’s with day and night mode
- Status LED’s with BJE color concept
- No frame required

- Availability: July 2018
KNX LED-Dimmer
KNX LED-Dimmer

Features

- Update of ABB’s multi channel dimmer especially for LED load
- Reliable dimming of LED lamps, 230V and low-voltage halogen lamps, as well as conventional incandescent lamps and dimmable energy saving lamps
- Optimized for Retrofit LED (no flickering, no glowing, constant dimming behavior)
- Minimum load only 2W
- One separate neutral per channel → connection of circuits with independent N now possible
- Automatic load detection (deselectable)
- Easy manual operation
- ABB i-bus® tool support
**KNX LED-Dimmer**

**Features**

- 4 channels (UD/S 4.210.2.1) and 6 channels (UD/S 6.210.2.1)
- Voltage: 110 – 230 V
- Frequency: 50/60 Hz

- Load per channel with trailing edge phase control (also LED)
  - 210 W, with channel bridging up 1200/800 W (6/4 channels)
- Load per channel with leading edge phase control (also LED)
  - 80 W, with channel bridging up 240/200 W (6/4 channels)

- Availability: July 2018
Features

- New frameless capacitive sensor for KNX
- Slim and modern design
- Devices are set max. 9mm on the wall (exception: cardholder 12mm)
- Proximity function and feedback signal
- Devices can optionally equipped with removal protection
- ABB color concept
- Portfolio includes push button sensors, room temperature controller, card holder, card reader and motion sensor
- Available in white and black
- For hotels, offices, public and residential buildings
- Real glass material
ABB-tacteo® KNX

Features

– Integrated KNX bus coupler
– Commissioning/parametrisation from ETS4 onwards
– ABB-tacteo room temperature controllers must be additionally supplied via a separate 24 V DC power supply
– Standard and customized components available
– Customer can create individual devices via online configuration tool
– No extra cost by configuration
– For global markets
  • VDE / British Standard / Chinese / Swiss type wallboxes / Italian standard wallboxes / NEMA type wallboxes
ABB-tacteo® KNX

1-fold
2-fold
4-fold
4-fold with RTC
WatchDog

6-fold
RTC
12-fold

Card holder (Hotel)

Card reader (Hotel)
**Configuration**

- Customers can choose between standard devices and products with individual labeling
- Adjustable are e.g. „Control Icons“, „Functional Icons“ and text
- After configuration a unique Design-ID is generated for ordering
- For hotels:
  - Compatible with ABB’s access control system Mini Mac
  - Card holder can work together with other systems based on MIFARE technology (operation of internal relay contact)
- Availability: available, except hotel devices
Busch-VoiceControl® KNX

**Situation**

- Voice control is a huge and growing market
- Millions of sold devices like Amazon Alexa, Google Assistant and Apple devices based on Siri
- Controlling your complete home with your voice is a clear trend
- There are three big players on the market for standalone voice control devices:
  - Amazon Alexa
  - Google Assistant
  - Apple Siri
Busch-VoiceControl® KNX

Solution and Features

- One device for all 3 systems (Amazon, Google and Apple), usage even in parallel possible
- Control of lights, blinds and room temperature
- Read out of various status information
- Up to 150 functions are possible
- Apple certified product
- Simple configuration

Availability: June 2018
Configuration

Configuration of the device is done via the MyBuildings portal
- Register your device
- Upload your KNX or Busch-ControlTouch project
- Define which group address has which function
- Load the configuration in the device Busch-VoiceControl KNX
- Connect your HomeKit, Amazon Echo (via skill) or Google Home device with Busch-VoiceControl
- Ready!
What is ABB-secure@home?

Free to be secure

ABB-secure@home is an easy-to-use intrusion system:
- Perimeter and Indoor protection
- Outdoor protection
- Smoke, flood protection
- Smart home integration

A secure home, protected at 360 degrees
Applications overview

**Outdoor protection**

**Perimeter and Indoor protection**

**Smoke, flood protection**

**Smart Home integration**
ABB-secure@home

Range overview

System

Indoor & Outdoor security

Safety
ABB-secure@home

Installation

Wireless

- ABB-secure@home portfolio encompasses wireless devices and sensors
- The wireless technology (Bidirectional, 128 bit Encryption with rolling code)
  - Makes renovation projects much easier
  - Allows the placement of security sensors in the most convenient spot to maximize protection
- The center of the system is the Central Unit, which is equipped with display and keypad for quick arming/disarming the system
- The central units allow also to be connected with free@home and Welcome system, to provide a full ABB smart home experience

For new dwellings and renovation
The perimeter sensors are positioned on the perimeter of the house: external barriers for doors and windows, bi-directional detectors, and ensure recognition of the intrusion before it happens.

The perimeter detection protects the house before the intrusion.
Indoor the protection can be divided into:

- Volumetric detection: sensors detecting presence within their range;
- Lock detection: sensors placed on windows or doors, shutters or blinds indicate the intrusion occurred through the opening of the windows, or lifting and breaking the shutter.
All round protection, not only from intruders!

The technical alarm sensors protect the house also from any fire hazards and problems which have arisen due to smoke, flooding and lack of electricity network.
There is no safety without comfort, there is no comfort without the natural feeling of living in complete freedom in your own home

- Security and home automation mixed scenarios and actions
- Remote access and easy visualization of status of all the intrusions zones and sensors
- Push-notifications to mobile devices via MyBuildings portal

Security at your fingertips
ABB-secure@home
ABB-free@home® integration

**ABB-free@home® Home Automation**

**ABB-secure@home Residential Security**

Availability: June 2018

- 2-wire BUS cable
- Wi-Fi
- 868.3 Mhz bidirectional
Building Automation
- There is an increasing trend towards integration of Building Automation Systems into IP networks and use of smart devices
- It increases comfort and efficiency, however security becomes an issue

ABB
- ABB is facing this topic already right now
- KNX as standard is considered to be insecure, especially in the hospitality segment
In KNX it is currently not possible to ensure secure communication by means of the KNX protocol.

- KNX is currently secured by securing the „system around KNX“
  - IP: Separate technical network, VPN, MAC filter
  - TP: Mechanical protection

The KNX Association promotes since L&B 2016 KNX Secure, but there were no KNX Secure devices on the market yet.

- The most relevant attack scenario on a KNX installation is over the IP network.
- But access over TP is of course also possible and relevant for Building Automation.
Telegrams are wrapped in a secure frame on IP (Backbone Key)
- Tunneling connections are secure (each server has a separate key)
- All IP devices in a project have to speak secure

KNX Secure
- KNX IP Secure
- KNX Data Secure

- Each individual group address is encrypted
- Data Secure means huge effort; every field device has to be changed (hardware and software)
KNX Secure – IP Router Secure

Solution

- Additional KNX IP Router IPR/S 3.5.1 which fulfills the KNX Secure Standard (KNX IP Secure)
- Communication on IP backbone, tunneling servers and commissioning with ETS are secure
- All functions from IPR/S 3.1.1 are available
- ETS project must be protected by a password (ETS enforces this)
- For commissioning, the FDSK of each device has to be imported (Factory default setup key)
- No backdoor (if a project or the keys are lost, they are lost)
KNX Secure – IP Router Secure

Solution

- ABB IP Router Secure IPR/S 3.5.1
  - Encryption of multicast communication on the IP backbone
  - Secure commissioning
  - 5 secure Tunneling Servers
- ETS is supporting KNX Secure since V5.6
  (Release in December 2017)
- EisBaer and NETx have integrated KNX Secure, so
  interoperability with our Router is available
  (tested with our Router)
- Availability: September 2018
In KNX building automation systems it is currently not possible to ensure secure communication completely.

Therefore the communication on field level is not encrypted (KNX Data Secure).

Especially in the hotel segment, the attack scenario from field level (hotel room) is relevant.

An intruder from within a hotel room can access the field bus and interfere with the KNX system.
Hotel IP Link Bundle HIL/S 20.1.1

ABB solution for the attack scenario from the field level

- Hotel IP Link Bundle HIL/S 20.1.1: Standard IP Interface IPS/S2.1 with “Room Power Supply” SV/S 30.200.3.1
- The Hotel IP Link Bundles connect all hotel rooms with a central systems (BMS Server)
- Tunneling connection from each room to central BMS
  - Security by isolated rooms!
  - It covers the use case „Attack from the field level (hotel room)“ as long as KNX Data Secure is not available
  - Attacking from the IP network or a room does not allow inter-room communication
  - BMS includes visualisation software which can also monitor the KNX field devices
- Available since 2017
EQmatic – Energy Analyzer QA/S

Energy measurement

- ABB EQmatic is a (new) range of compact and web-based stand-alone devices for energy management applications
- EQmatic is simple and ready to use solution to read out meters
- They are used for monitoring, logging, displaying and analyzing consumption data of electricity, gas, water or heat meters via M-Bus or Modbus RTU
- The user interface provides graphical analysis functions
- EQmatic closes the gap between EQmeters and high-level software applications
EQmatic – Energy Analyzer QA/S

Overview

- ABB EQmatic is collecting data from up to 16/64 M-Bus or Modbus meters and stores them locally in the device data base.
- ABB EQ Meters (A- and B-Series) will automatically be detected after a Bus-Scan and added to the system.
- Other M-Bus/Modbus meters can be manually configured and added to the system.
- Access to the device is established via standard web browser.
- The collected data are displayed in the user interface via graphical charts and diagrams.
- Data Transfer to Modbus/TCP (BMS, Visu)

<table>
<thead>
<tr>
<th>Max. # of meters</th>
<th>QA/S 3.16.1</th>
<th>QA/S 3.64.1</th>
<th>QA/S 4.16.1</th>
<th>QA/S 4.64.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-Bus</td>
<td>16</td>
<td>64</td>
<td>16</td>
<td>64</td>
</tr>
</tbody>
</table>
The devices have a user interface for commissioning and operating purposes. To access the user interface, there must be an IP connection to the device. The user interface offers:

- A configurable dashboard
- Graphical analysis functions (historical data, benchmark - period, instantaneous values, ...)
- Management
- System settings
EQmatic – Energy Analyzer QA/S

Energy Analyzer Modbus QA/S 4.16.1 and QA/S 4.64.1

Device technology

- Modular installation device (MDRC)
- Mounting width: 4 space units
- LAN connection
- Auxiliary voltage 100...240 V AC
- Modbus master to DIN EN 13757-2
- Max. number of connectable Modbus devices
  - QA/S 4.16.1: 16 meters (slaves)
  - QA/S 4.64.1: 64 meters (slaves)
- Availability June 2018

- Energy Analyzer (M-Bus) QA/S 3.x.1
  - Already available
  - Software update: June 2018
ABB safe&smart

KNX Security Panel GM/A 8.1

A complete product portfolio
ABB safe&smart

Smartphone App

Control from everywhere

- The ABB safe&smart App is designed for the ABB safe&smart system
- ABB safe&smart App for Android and iOS smartphones for easy and secure access to the KNX Security Panel GM/A
  - Local access via wireless network (Wifi)
  - Remote access via “MyBuildings portal”
- Convenient and secure cloud solution with point-to-point encryption
- The app is used for operation and display of the complete ABB safe&smart system
- Push notification service via MyBuildings portal in case of alarm
- Availability (GM/A firmware update and App): May 2018
- Web page: www.abb.com/knx-alarm
Operation and display of the entire system

- **Operation:**
  - Set/Unset
  - Reset alarms/faults
  - Switch off acoustic
  - Switch on/off Disable Groups

- **Display:**
  - Status of each area
  - Event log
  - SafeKey Event log
  - Alarms/faults
  - Triggered Zones
ABB safe&smart

Smartphone App

Always see what happened

- Imagine, you are not at home and someone breaks into your house
- You would be very surprised when you come back
- With the ABB safe&smart App you receive a push notification and you can immediately see what happened and react before you come back home
User right management only via GM/A

- The user right management for the smartphone app can only be done via the WebUI of the KNX Security Panel GM/A
ABB safe&smart

Smartphone App

**Pairing via QR-Code**

- Easy pairing via generated QR-Code from the WebUI of the KNX Security Panel and integrated QR-Code scanner in the App
Webinar “News Light + Building 2018”

Smarter Building – Innovation Magazine

- Smarter Building
- Smarter Home
  - Comfort
  - Safety/Security
  - Energy
  - Design
  - Connectivity
- Smarter Mobility
  - Charging Infrastructure
  - ABB Formula E
- Download Link
- 2CDC003075B0101
Webinar “News Light + Building 2018”

Training & Qualification Calendar 2018

In addition to the online modules and the traditional training programs offered by your local ABB sales team, we offer a variety of on-site trainings conducted by our specialists at different ABB training facilities.

In this Training & Qualification Calendar you can find the educational events that are taking place during 2018.

If you are interested in a training please click the “REGISTER HERE” button

www.abb.com/knx or https://go.abb/ba-training

→ Training and Qualification
→ Training Calendar

©ABB
May 17, 2018 | Folie 56
Webinar “News Light + Building 2018”

**KNX Certified Training**

Certified KNX Courses in Heidelberg
- Advanced Course 16th to 20th July
- Tutor Course 09th to 13th October

And many more training courses in the calendar “International Training Dates 2018”

[www.abb.com/knx](http://www.abb.com/knx) or [https://go.abb/ba-training](https://go.abb/ba-training)
Next Webinar

ABB i-bus® KNX: ClimaECO

Wednesday 16th May 2018
- Morning 09:00 am Europe Time (Berlin, UTC + 2h)
- Afternoon 03:00 pm Europe Time (Berlin, UTC + 2h)

Holistic Solution based on KNX from Central HVAC (Energy Generation and Distribution) to Room Automation (Energy Consumption) with controlling (Management and Automation) to run the Building economically

- Web Page: [www.abb.com/ClimaECO](http://www.abb.com/ClimaECO)
- Video on Youtube: “ClimaECO – Heating Ventilation and Air Conditioning with ABB i-bus® KNX” [https://youtu.be/6_kI_u_Qyl4](https://youtu.be/6_kI_u_Qyl4)
Disclaimer

The information in this document is subject to change without notice and should not be construed as a commitment by ABB. ABB assumes no responsibility for any errors that may appear in this document.

In no event shall ABB be liable for direct, indirect, special, incidental or consequential damages of any nature or kind arising from the use of this document, nor shall ABB be liable for incidental or consequential damages arising from use of any software or hardware described in this document.

© Copyright [2018] ABB. All rights reserved.