WEDNESDAY, 8TH APRIL 2020.

KNX Home and Building Automation

ABB i-bus KNX
KNX Smart Home and Intelligent Building Technology

An introduction to KNX – Welcome to a smarter tomorrow
KNX Smart Home and Intelligent Building Technology

Agenda

- What/who is KNX?
- KNX History
- KNX Philosophy
- KNX Interoperability
- KNX Application Areas
- KNX Energy Efficiency
- KNX Projects
KNX Smart Home and Intelligent Building Technology

What/who is KNX?
The demand for comfort and versatility in the management of heating, lighting and access control systems for a family home as well as an office complex is growing. At the same time, the efficient use of energy is becoming increasingly important. People want a comfortable, sustainable and safe place to live and work and that's where automation jumps in.

Increased convenience and safety together with lower energy consumption can only be achieved using intelligent control and monitoring of all products involved. This is a true challenge as it implies more wiring for sensors and actuators to control and monitoring centres. For professionals, such a mass of wiring also means higher design and installation efforts, increased fire risk and soaring costs.

That's where KNX jumps in!
Automation doesn't have to be difficult. It requires a system that does away with the problems of isolated devices by ensuring that all components communicate via one common language. The kind of device you want to use doesn't matter anymore. Whether you want to control lighting, shutters, security systems, energy management, heating, ventilation... all functions work one system.

This is the principle of interworking.

This is home and building control made easy.

This is KNX!
KNX Smart Home and Intelligent Building Technology

KNX Organisation

Smart home and building solutions.

495 KNX Members
8,000 Products
490 KNX Training Centres
90,000 KNX Partners
190 Countries
Mission and Objectives

Our Mission is
To develop and promote the KNX standard so that it is recognised as the basis for creating:

Smart home and building solutions
That can be globally used, are secure and connected.

To ensure that the market recognises KNX Association's members and their products as the driving force worldwide to open the market of smart homes and buildings and enhance the share of intelligent building infrastructure. KNX Association with its standard KNX is a generator of business opportunities.

Our Objectives are

The objectives of KNX Association are oriented towards the development and promotion of an international communication standard for Home and Building Automation by:

- Developing a single, stable and affordable system technology with the goal to improve overall market acceptance and expand the today's market (mostly in commercial buildings) into the residential market.
- Defining and improving the KNX Specifications related to:
  - Protocols (including Security).
  - Different media.
  - Configuration models.
  - Application specifications.
- Extending the KNX Technology towards the Internet of Things.
WELCOME TO KNX AUSTRALIA

The worldwide standard for home and building control, adopted by Standards Australia as a technical specification.
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KNX Australia Organisation
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KNX History
Before 1997: Three major bus associations in Europe

1. **Batibus**: Bus medium originally developed by Schneider Electric – especially successful in France

2. **EIBA**: Especially successful in German speaking countries – owner of the common design & commissioning tool ETS

3. **EHSA (European Home Systems Association)**: Association resulting from a European project for automatic configuration of bus compatible white (washing machine, ...) and brown (video, ...) goods
• EIBA - European Installation Bus Association
• Was found on 8. May 1990 in Belgium (by manufactures of installation devices)
• Organisation across Europe for all companies developing and manufacturing EIB products
• Bus technology based on a common European concept
• The aim was to provide a Bus System with fully compatible devices providing a high degree of interworking → EIB
• EIB Tool Software ETS
1997: Start of the convergence process with the following goals

- Creation of a joint standard for a new bus system “KNX”
  - Based on EIB
  - Extended with configuration mechanisms other than PC based programming, i.e. easy configuration
  - Extended with new media: RF and IP
- European Standardisation of the KNX standard by becoming co-operation partner of CENELEC (European Committee for Electro-technical Standardisation)
- Registration of a new trademark
- Start of a Certification procedure for KNX compatible devices

→ 14 April 1999: Founding of Konnex Association in Brussels with 9 founding members
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KNX Association - 495 Members
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ABB's Pedigree in Intelligent Building Control

1983
First bus installation system SIGMA® i-BUS

1990
Founder Member of the EIBA Association in Brussels

1992
ABB i-bus® EIB launched in Germany

1999
Founder Member of KNX World's first open Standard, Brussels

Today
ABB's involvement in KNX today
KNX Smart Home and Intelligent Building Technology

KNX is 30!

495 KNX Members
8,000 Products
490 KNX Training Centres
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190 Countries

Smart home and building solutions.

Join us
www.knx.org
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KNX Philosophy
• KNX is an installation bus which provides a cost-effective and flexible solution for a wide range of different tasks in commercial and industrial buildings.

• KNX is the world’s only open Standard for the control in both commercial and residential buildings, defined by IEC1453-3.

• Adopted as SA/SNZ ISO/IEC TS 14543.3.1-6:2018

• KNX is controlled by the KNX Association in Europe which ensures the technology is independent of all manufacturers.

• KNX devices from different manufacturers are checked for compliance with the standard, registered and certified by the KNX Association. Compliant devices display the registered KNX Logo.
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Over 8,000 products available
KNX Smart Home and Intelligent Building Technology

ABB i-bus KNX – The future of Building Control at www.abb.com/KNX
KNX Smart Home and Intelligent Building Technology

ABB i-bus KNX – The future of Building Control Product overview

Smarter Solutions for Home and Building Automation
ABB i-bus® KNX
Product Range Overview 2019/2020

Product description, quick and easy selection of product codes
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ABB i-bus KNX – The future of Building Control

Energy consumption

Switching
  - With/without current detection
  - With energy measurement

Switch and dim lighting

DALI lighting control

Shutters and blind control

Heating/cooling via valve control

Ventilation/climate control

Room management
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ABB i-bus KNX – The future of Building Control

- Power supplies
- Binary inputs
- Analogue inputs
- Weather sensors
- Presence detectors
- Logic and time control
- Room temperature and humidity sensors
- Security devices
- Hotel access control
ABB i-bus KNX – The future of Building Control

- Transmission speed: 9,600 bit/s
- Bus access method: CSMA/CA
- Symmetrical transmission, high common mode rejection by transformer coupling
- Application program and addresses in the EEPROM of the bus coupling units
- Program with the Engineering Tool Software ETS
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ABB i-bus KNX – The future of Building Control

230v

i-bus® KNX
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KNX Interoperability
KNX Smart Home and Intelligent Building Technology

KNX Interoperability

Conventional Installations

Customer

Heating

Electrical installations

Shutter

Manufacturer A

Product 1

System 3

Manufacturer K

System 1

Product 2

System 3

Manufacturer L

System 1

Product 2

Linking several functions
expensive
cost-intensive
inconveniently arranged
complex
Home and Building Management System with KNX

Customer

Heating

Electrical installations

Shutter

Manufacturer A

Product 1

System 3

Manufacturer K

System 1

Product 2

System 3

Manufacturer L

System 1

Product 2

Linking several functions
expensive
cost-intensive
inconveniently arranged
complex
ETS stands for Engineering Tool Software. It’s a manufacturer independent configuration software tool to design and configure intelligent home and building control installations with the KNX system. ETS runs on the Windows platform.

ETS5 Professional is used to create solutions for all application areas

ETS5 Professional empowers your business – not only technologically, but above all commercially.
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KNX Interoperability with ETS
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KNX Application Areas
KNX Smart Home and Intelligent Building Technology

Application Areas

Fit for all types of buildings

- With KNX you can combine all kinds of smart home and building solutions to automate and simplify your customer's daily life.

- With KNX you are in control!
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Application Areas – Lighting Control

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

- Triton 5-fold
- Dim Actuator
- Motion Detector
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Application Areas – HVAC Control

Individual room control – time and remote controlled

Room Thermostat

Electrothermal or Electromotorical Valve
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Application Areas – Shutter and Blind Control

Separate - Groups - Central - Depending on sun, rain or wind

- Sun protection of Winter Garden
- Garage Gate
- Ventilation of Winter Garden
- Roof Window
- Awning
- Shutter
- Garage Gate

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Application Areas

- Lighting control and regulation
- Control of heating, ventilation, cooling
- Blinds and shutter control
- Security and monitoring
- Energy and load management
- Visualization and operation
- Central automation
- Remote control / maintenance
- Interface to other control systems
- Presence detection
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Building Types

- Office Buildings
- Apartments/Villas/Flats
- Hotels/Restaurants/Hospitals
- Exhibition Centers
- Sport stadiums
- Museums / Churches
- Schools / Universities
- Banks
- Airports
- Industrial Facilities
- Shopping centers
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KNX Energy Efficiency
Yes, we care!
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Energy savings – light control

- Time switched control -
  up to 10% energy savings possible
- Presence detection -
  up to 20% energy savings possible
- Presence and brightness detection -
  up to 40% energy savings possible
- Constant brightness control -
  up to 50% savings possible
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Energy savings – blind control

- Brightness detection -
  up to 13% savings possible (HVAC)

- Brightness and presence detection -
  up to 13% savings possible (lighting)
  up to 21% savings possible (HVAC)
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Energy savings – HVAC control

- Time controlled per room -
  up to 10% savings possible

- Presence detection -
  up to 25% savings possible
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Energy savings – University of Bremen

Heating energy usage

KNX Scientific Conference
Wien, 9.-10.11.2006
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Energy savings – University of Bremen

**Lighting energy usage**

Daylight dependent light control with presence detection and two dedicated illuminance sensors for two groups of lamps

KNX Scientific Conference
Wien, 9.-10.11.2006

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KNX Projects
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Barangaroo
KNX Smart Home and Intelligent Building Technology
Monash University New Horizons Building

- Lighting Control and Regulation:
  - Switching
  - Central Control
  - Time Control
  - Day light harvesting
- Central Automation
  - Complex Logical Operations
  - Time Control
- Other Applications
  - Bacnet interface to BMS
KNX Smart Home and Intelligent Building Technology
NEXT Data center Perth

- Lighting Control and Regulation:
  - Switching
  - Time Control
  - Day light harvesting
  - Central Control
  - Light Scenes
  - Emergency Lighting
  - Visualisation
KNX Smart Home and Intelligent Building Technology
15 Green Square Close Brisbane

- Lighting Control and Regulation:
  - Switching
  - Central Control
  - Time Control
  - Day light harvesting
  - Central Automation
  - Emergency lighting
  - Other Applications
  - Bacnet interface to BMS
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City West Police Complex Melbourne

- Lighting Control
  - Daylight Dependent Switching
  - Daylight harvesting

- Blind and Shutter Control
  - Sun Position Dependent Control (Light Steering, Glare Protection)
  - Central Control

- Operation, Indication and Visualisation
  - Visualisation via PC
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850 Collins Street Melbourne

- Lighting Control System
- Sensor operated daylight harvesting
- Bacnet Interfacing to other Building System
- Operation, Indication and Visualisation
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ANZ Tower Sydney

- Energy efficient lighting control system
- Solar shading
- Security and interface control
- Air conditioning
- PV and wind power generation
- Smart metering of power and water
- Roof mounted weather station