



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

ABB GPG Building Automation Webinar News Light + Building 2016 Part 1

Webinar "News Light + Building 2016"

Agenda



- KNX
 - Analogue Outputs AA/X x.1.2
 - Application Controller ABA/S 1.2.1
 - Magnetic Contact MKE/A 1.868.1 (EnOcean)
 - Valve Drive SE/K 1.868.1 (EnOcean)
- ABB-free@home
 - Fan Coil Actuator FCA-M-2.3.1
 - Weather Station WS-1
 - ABB-free@home Panel 4.3"

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Agenda



- KNX in general (KNX Association)
 - ETS inside
 - KNX IP Secure and KNX Data Secure



- Building Space Office



- Next Webinar
 - Further News Light + Building 2016" – Part 2
 - Wednesday, 27th of April
 - KNX devices, free@home wireless, ABB Welcome, ...)

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New Analogue Actuators AA/X x.1.2

AA/S 4.1.2

DIN Rail

→ no longer brand label product



AA/A 2.1.2

New surface mounted device

→ with IP 54 housing



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Existing Analogue Actuators



- Replacement of
 - AA/S 4.1
Analogue Actuator
 - AAM/S 4.1
Analogue Actuator Module
(Extension Module for AA/S 4.1)

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AA/X x.1.2: Application Area

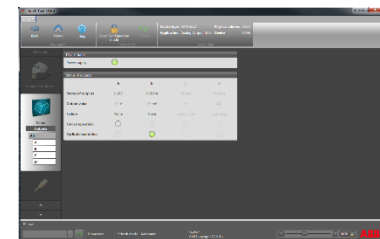
- Convert bus signals into analogue values
 - main application is 0...1 V, 0...5 V, 0...10 V, 1...10 V DC, 0...20 mA and 4...20 mA
- HVAC applications
 - Control of analogue (0-10V) valves in heating or cooling applications
 - Control of Fan Coil Units with continues fan
 - In combination with VAA/S or ES/S
 - Set point interface to boiler, chiller or air handling units
- Lighting applications
 - Active 0-10V interface e.g. for LED Dimming
 - In combination with SA/S for switching



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AA/X x.1.2: New and improved features

- Hardware
 - Wide range supply voltage input 100 – 240 V AC
 - Galvanic isolation between power supply and outputs
 - Surface mounted variant bus supplied
 - Outputs with higher accuracy → 0 V is really 0 V
- Software
 - Integration in ABB i-bus Tool
 - Creation of characteristic curve
 - Scenes
 - More input types (DPT)



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AA/A 2.1.2: ETS Application



Topology

- Dynamic Folders
- 1 Area 1
 - 1.1 Line 1
 - 1.1.5 Analogue Actuator,2-fold,0-10V,SM
 - 1.1.8 Analogue Actuator,4-fold,0-10 V,0-2...

1.1.5 Analogue Actuator,2-fold,0-10V,SM > Channel A > A: General

General

Channel A

A: General

Channel B

Type of output: 0...10 V

Input format: 1 Byte [0...255] DPT 5.005

Create own characteristic curve: ☒ No ☐ Yes

Definition of output range: Input value for 0% output value: 0

Input value for 100% output value: 255

Enable functionality dimming: ☒ No ☐ Yes

Enable functionality 8-Bit scene: ☒ No ☐ Yes

Enable functionality forced operation: ☒ No ☐ Yes

Activate cyclical monitoring: No

Behavior at bus voltage recovery: ☒ As before bus voltage failure ☐ User defined value

Value read for object values at restart and bus voltage recovery: ☒ No ☐ Yes

Sending of status values: On request

0...1 V
0...5 V
0...10 V
1...10 V

1 Byte [0...255] DPT 5.005
1 Byte [0...100]% DPT 5.001
1 Byte [-128...127] DPT 6.010
2 Byte [0...65535] DPT 7.001
2 Byte [-32768...32767] DPT 8.001
2 Byte [Floating Point] DPT 9.0XX
4 Byte [IEEE Floating Point] DPT 14.0XX

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AA/S 4.1.2: ETS Application



Topology

- Dynamic Folders
 - 1 Area 1
 - 1.1 Line 1
 - 1.1.5 Analogue Actuator, 2-fold, 0-10V, SM
 - 1.1.8 Analogue Actuator, 4-fold, 0-10 V, 0-20 mA, MDRC > Channel A > A: General

General

Type of output: 0...10 V

Input format: 1 Byte [0...255] DPT 5.005

Channel A

Channel B

Channel C

Channel D

A: General

Create own characteristic curve: ☒ No ☐ Yes

Definition of output range: Input value for 0% output value: 0

Input value for 100% output value: 255

Enable functionality dimming: ☒ No ☐ Yes

Enable functionality 8-Bit scene: ☒ No ☐ Yes

Enable functionality forced operation: ☒ No ☐ Yes

Activate cyclical monitoring: No

Behavior at bus voltage failure or ETS programming: ☒ Keep latest output value ☐ User defined value

Behavior at bus voltage recovery: No reaction

Value read for object values at restart and bus voltage recovery: ☒ No ☐ Yes

Sending of status values: On request

0...1 V
0...5 V
0...10 V
1...10 V
0...20 mA
4...20 mA


1 Byte [0...255] DPT 5.005
1 Byte [0...100]% DPT 5.001
1 Byte [-128...127] DPT 6.010
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2 Byte [Floating Point] DPT 9.0XX
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AA/X x.1.2: i-bus Tool – Overview

Device status

Power supply



Status of outputs

	A	B	C	D
Status of outputs	1-10V	0-20mA	Unused	Unused
Output value	5,5 V	5,0 mA	0,0	0,0
Failure	None	None	Short circuit	Open loop
Forced operation				
Cyclical monitoring				

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AA/X x.1.2: i-bus Tool – Channel Details

Status	
Status of outputs	1-10V
Failure	None
Forced operation	<input type="radio"/>
Cyclical monitoring	<input type="radio"/>

Physical value	
Physical value	<input type="text" value="6.1 V"/> <input type="button" value="X"/> <input type="button" value="↵"/>
Value overwritten	<input type="radio"/>

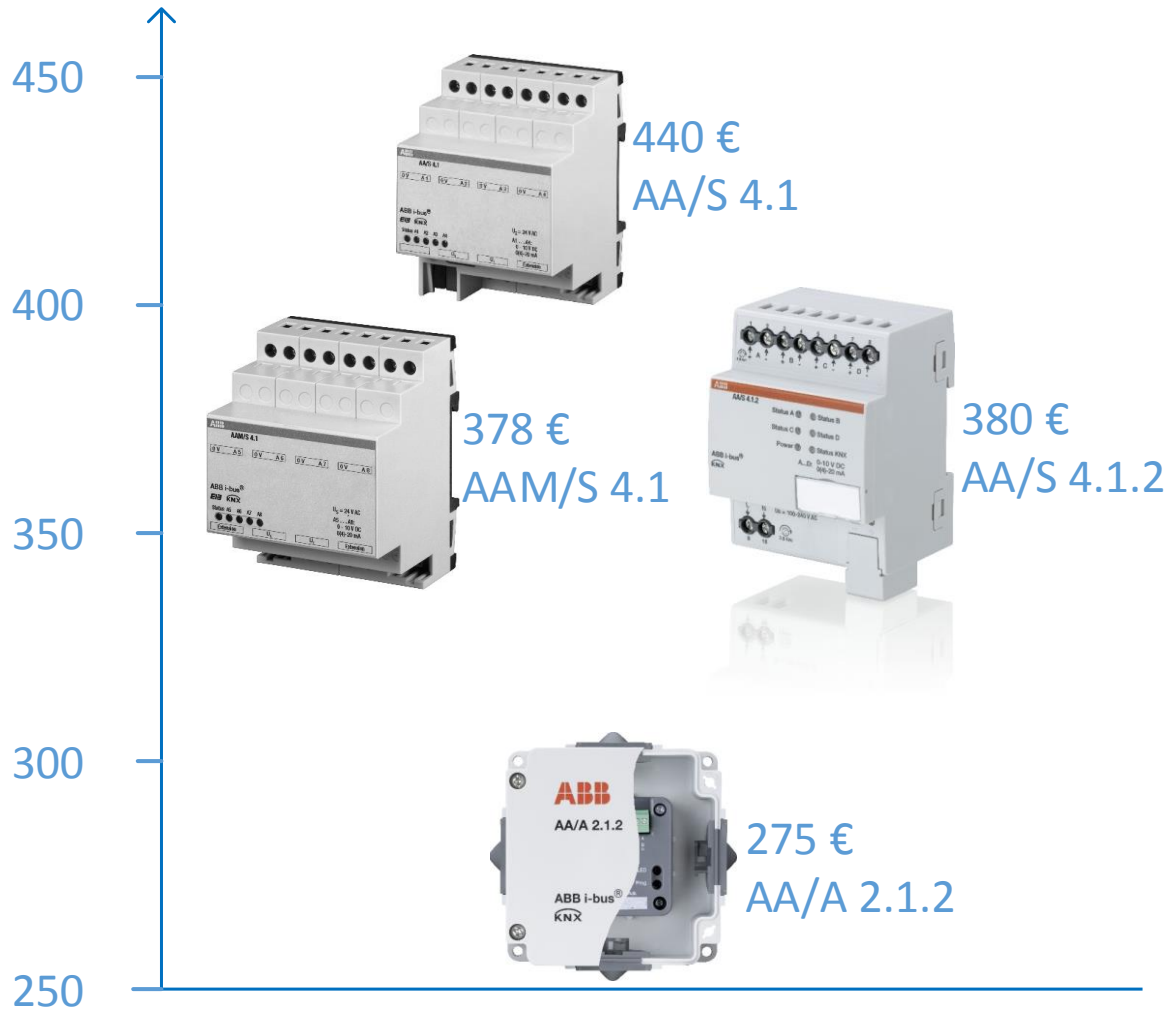
Input value	
Input value DPT 5.005	<input type="text" value="0"/> <input type="button" value="X"/> <input type="button" value="↵"/>
Value overwritten	<input type="radio"/>

Scene	
Scene number	<input type="text" value="1"/> <input type="button" value="Recall"/> <input type="button" value="Store"/>

Assigned scenes	
Scene number	Assigned value
1	10 %
2	20 %
3	30 %
4	40 %
64	100 %
17	12 %

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AA/X x.1.2: List Prices



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AA/X x.1.2: Product range overview

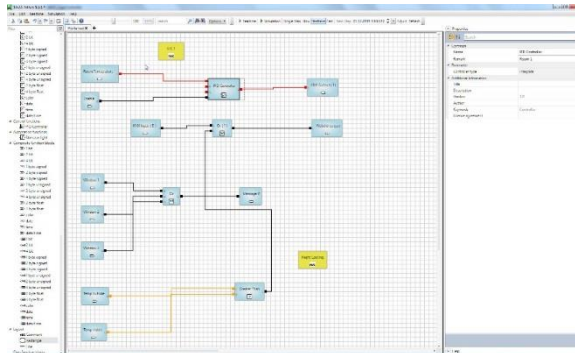
Device	AA/S 4.1.2	AA/A 2.1.2	AA/S 4.1
Status	July 2016	July 2016	Classic
Number of outputs	4	2	4
Mounting	MDRC	SM	MDRC
Power Supply	110-240 V AC	KNX	24 V AC
Voltage Output	0...10 V	0...10 V	0...10 V
Current Output	0(4)... 20 mA	-	0(4)... 20 mA
Extension Module	-	-	X

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Logic Controller ABA/S 1.2.1

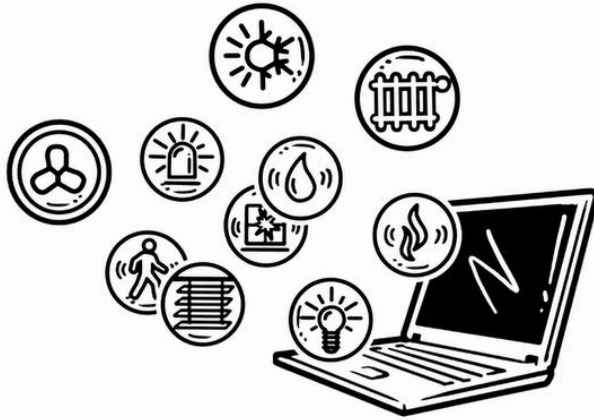


- The new Logic Controller is an extremely powerful device for almost unlimited customized logic functions
- It can easily and reliably accommodate altered or extended functionality requests during construction or usage of the building
- The Logic Controller opens new application for the KNX systems (e.g. HVAC)



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ABA/S 1.2.1: What's new?



- One device for all solutions providing you the certainty that all requirements can be covered
- Up to 3000 function elements (ABL/S 2.1: 140)
- Extensive logic functions, like
 - Mathematics
 - Calendar and timers
 - Room temperature control (PID-controller)
- Simulation (offline and online)
- Composite function blocks
- LAN interface
- 24 V DC Power supply or PoE

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ABA/S 1.2.1: Benefits



- **Graphical programming interface** in ETS software environment without the need to install additional software avoiding additional maintenance effort and group address synchronisation
- Comprehensive list of function elements for all typical building applications allowing to serve diverse project requirements with a single device
- It is possible to create self-defined function blocks. They can be stored and reused in future projects saving time and enhancing reliability
- WebUI for changing and displaying values

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ABA/S 1.2.1: Benefits



- **Inbuilt simulator** facilitates efficient and reliable commissioning on the project's site. All functions can be tested before going live ensuring a safe operation
- Current live state of the logic can be monitored in real-time facilitating troubleshooting and diagnostics
- Short power failures (< 1min) will be bridged by the internal energy buffer thus the previous system state can be restored after voltage recovery
- Fast download of application program by utilizing LAN interface saving time during commissioning

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ABA/S 1.2.1: Price and Availability



- List Price: 699,- EUR
- Available September 2016

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Complete Range for Logic Control



Logic Module LM/S 1.1	Application Unit Logic ABL/S 2.1	Application Unit Time ABZ/S 2.1	Logic Controller
149,50 €	599,00 €	438,50 €	699,00 €

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EnOcean



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EnOcean



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Valve Drive SE/K 1.868.1 EnOcean



- Proportional valve drive controlling heating or cooling valves
- Wireless communication via EnOcean and Gateway EG/A 32.2.1 to KNX room temperature controller
- Benefits:
 - Easy mounting on valve base without any wires
 - Display for current set point temperature and alarms
 - Easy set point temperature directly at the valve drive
 - Signal strength can be measured with ABB i-bus Tool
 - Battery supplied, maintenance free operation for four years

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Valve Drive SE/K 1.868.1 EnOcean



ABB i-bus KNX EG/A 32.2.1

Gateway Mapping Remote EnOcean Teach-In

Add Device Node Remove Device Node

EnOcean device nodes

- N01 : Heating Ra {A5-20-04}
- Out_
- 0 : Control_Valve Position
- 1 : Control_Temperature Setpoint
- 2 : Control_Measurement Control
- 3 : Control_Wake-up Cycle
- 4 : Control_Display Orientation
- 5 : Control_Button Lock Control
- 6 : Control_Service Command
- In_
- 7 : Status_Current Position
- 8 : Status_Feed Temperature
- 9 : Status_Temperature Setpoint
- 10 : Status_Measurement Status
- 11 : Status_Room Temperature
- 12 : Status_Failure Alarm
- 13 : Status_Status Request
- 14 : Status_Button Lock Status

Expand Collapse Show disabled KNX objects

Resources:

- KNX communication objects : 15 of 253
- EnOcean channels : 1 of 32

Device node1 : Heating Ra (N01) {A5-20-04} Heating Radiator Valve Actuating Drive

General device settings

EnOcean periodic output update: (disabled)

☐ Wait for data integrity before transmitting to EnOcean (Edit initial data...)

Hide common parameters in KNX objects

Control_Valve Position

KNX periodic input update: (disabled)

Control_Temperature Setpoint

KNX periodic input update: (disabled)

Control_Measurement Control

KNX periodic input update: (disabled)

Control_Wake-up Cycle

KNX periodic input update: (disabled)

Reset Configuration Import Catalogue

Conf. saved: (never) Catalogue version: 0.1.2

v:1.0.0.14

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Magnetic Contact MK/E 1.868.1 EnOcean



- Wireless device mounted on windows and doors to recognize open and close state
- Benefits:
 - For easy and fast integration in a KNX system via KNX/EnOcean Gateway EG/A 32.2.1
 - Simple mounting on window or door frame (screwing or adhesive)
 - Self-supplied via integrated solar cell, no wires needed
 - Signal strength can be measured with ABB i-bus Tool
 - Commissioning with teach button and ETS application of EG/A 32.2.1

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Magnetic Contact MK/E 1.868.1 EnOcean



The screenshot displays the ABB i-bus KNX EG/A 32.2.1 software interface. The title bar indicates the version is 32.2.1. The interface is divided into several sections:

- Gateway Mapping:** Includes tabs for "Gateway Mapping" and "Remote EnOcean Teach-in".
- Device Management:** Features "Add Device Node" and "Remove Device Node" buttons.
- EnOcean device nodes:** A tree view showing the hierarchy: "EnOcean device nodes" > "N01 : Window contact {D5-00-01}" > "In_" > "0 : Status_Contact".
- Device node1 : Window contact:** Displays the selected device's details, including its address {D5-00-01}.
- General device settings:** Contains a text box explaining that several EnOcean devices can be bound and specific signals will be passed on to KNX. It includes a dropdown menu for "Contact" set to "Report last value received by any device" and a button to "Hide common parameters in KNX objects".
- Status_Contact:** Includes a checkbox for "Only value changes in KNX object are forwarded" and a dropdown for "KNX periodic output update" set to "(disabled)".
- Resources:** A section at the bottom left showing "KNX communication objects : 1 of 253" and "EnOcean channels : 1 of 32".
- Buttons:** "Expand", "Collapse", and "Show disabled KNX objects" are located below the device nodes tree.
- Footer:** Includes "Reset Configuration" and "Import Catalogue" buttons, along with status information: "v:1.0.0.14", "Conf. saved: 4/5/2016 10:43:01 AM", and "Catalogue version: 0.1.2".

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EnOcean



- Valve drive EnOcean SE/K 1.868.1
 - Available May 2016
 - List price in Euro: t.b.d
- Magnetic contact EnOcean MKE/A 1.868.1
 - Already available
 - List price in Euro: 91,-

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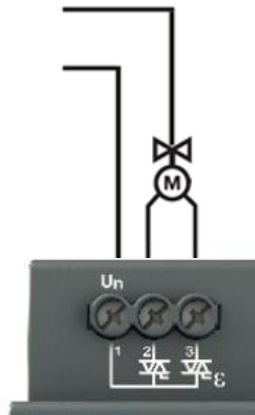
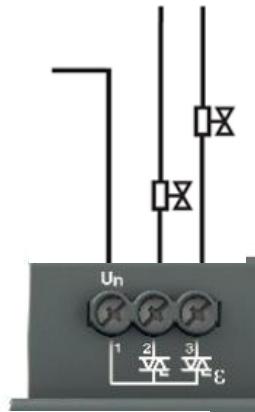
free@home: Fan Coil Actuator FCA-M 2.3.1



- Control of Fan coil units together with room temperature controller
- Three relays for fan speed control
- Two electronic outputs for valve drive control
 - Electrothermal valve drives
 - Motor valve drives
- Two binary inputs

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free@home: Fan Coil Actuator FCA-M 2.3.1



- Electrothermal valve drives:
 - 2 pipe systems for heating
 - 2 pipe systems for cooling
 - 2 pipe systems for heating or cooling with switching object
 - 4 pipe systems for heating and cooling
- Motor valve drives
 - 2 pipe systems for heating
 - 2 pipe systems for cooling
 - 2 pipe systems for heating or cooling with switching object

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free@home: Fan Coil Actuator FCA-M 2.3.1

Electronic outputs
(0.5 A, 24 – 240 V AC)
for valve drives

Relais outputs (6 A, 100 – 240 V AC)
for fan speed
(Step switch or changeover switch)



Binary inputs for potential free
contacts (Dew point, Condensate)

Bus connection

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free@home: Fan Coil Actuator FCA-M 2.3.1



- Parameters:
 - Type of valve
 - Stepswitch/Changeover switch
 - Fan mode (quiet)
 - Night mode
 - Starting time fan
 - Offset temperature
 - ECO temperature
 - ...

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free@home: Fan Coil Actuator FCA-M 2.3.1



Room temperature controller RTC-F-1

- Display shows setpoint temperature and operating modes
- Rocker to change setpoint, fan speed and operating modes (comfort, eco, frost protection, off)
- RTC automatically switches to fan coil mode when linked to the Fan Coil actuator in the user interface
- Older devices require a firmware update to activate the function
- New cover plate for FCU control (CP-FCC-xx)

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free@home: Weather Station WS-1



- Detection of brightness, outside temperature, wind speed and rain
- Hardware similar to the KNX version
- Power is supplied via bus voltage
- Rain sensor can be heated, requires 230 V
- Weather data can be visualized in the free@home web interface and app
- Shading scenarios (e.g. blinds to 50% when 30,000 lux are exceeded)

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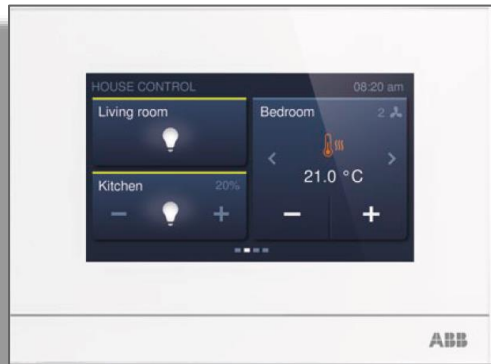
free@home: Weather Station WS-1



- Wind speed measuring range 2 - 30 m/s
- Voltage: 110 - 230 V AC
(only or rain sensor heating)
- Frequency: 50 - 60 Hz
- Brightness: 1 Lux - 100000 Lux
- Protection class: IP 44
- Temperature range -20 °C to 55 °C

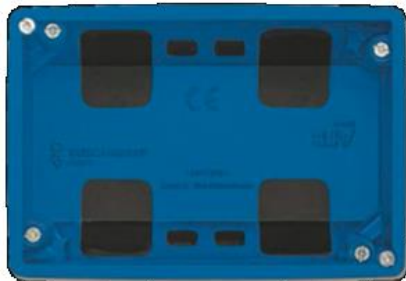
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free@home Panel 4.3"



- 4 pages configurable by the user, each with up to 4 functions (max. 16 functions)
- Primary function with 3 fingers
- Separate 24 V power supply via second pair of wires
- Visualization of window status (open/closed) on a separate page
- Configuration in the "panel" area of the user interface, just like the 7" version
- Touch is acknowledged visually and acoustically
- Display switched off during standby mode

Webinar "News Light + Building 2016" free@home Panel 4.3"



- Colour: Black or white
- Display resolution: 480 x 854 Pixel
- Continuous glass surface with capacitive touch
- Dimension: 143 mm x 104 mm
- Flush-mounted, mounting height 8 mm
- Wind-proof flush-mounting box DP4-F, installation depth 50 mm
- No tools required, panel is mounted with a magnetic catch

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free@home Panel 4.3"



- Integrated room temperature controller
- Optional external temperature sensor 6226/T
 - Mode 1: Temperature measurement with internal sensor
 - Mode 2: Temperature measurement with external sensor
 - Mode 3: Internal temperature measurement plus temperature limit via external sensor (e.g. to avoid floor overheating)

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- Fan Coil Actuator FCA-M 2.3.1
 - Available May 2016
 - List price in Euro: 197,-



- Weather station WS-1
 - Available 2016
 - List price in Euro: 510,-

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free@home



- ABB free@home Panel 4.3"
 - Available June 2016
 - List price in Euro: 397,-



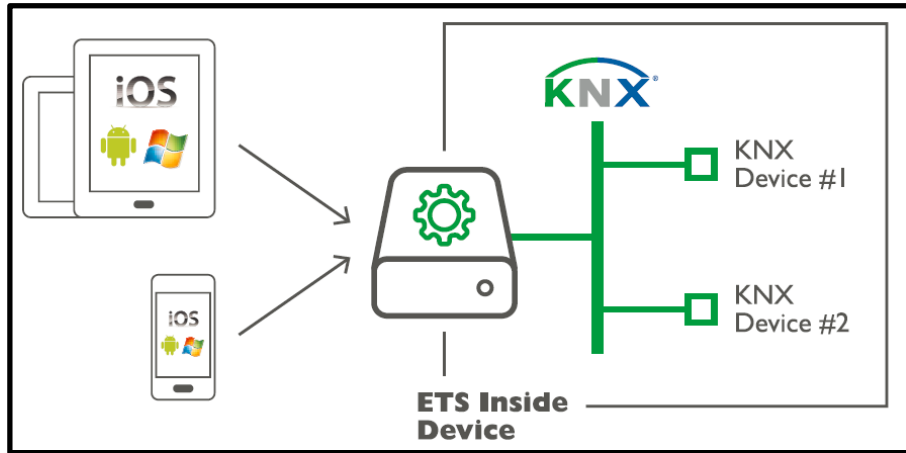
- Mounting Box DP4-F
 - Available June 2016
 - List price in Euro: 25,50



- External Temperature sensor 6226/T
 - Available June 2016
 - List price in Euro: 21,50

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KNX Association: New "ETS Inside"



Basic principle of a decoupled user interface:
Intelligent and simple parameterization via
tablet or smartphone.

Please note:

KNX devices are to be adapted for ETS Inside
by the manufacturer !

- ETS Inside: simple software (less text, more symbols) for small projects
- ETS data and project are stored in a **ETS Inside device**
- Access via browser (log-in data) in iOS, Android or Windows (tablet, smart phone) to edit the project
- ETS Inside project can be synchronized with ETS Professional or vice versa
- Functions for enduser to be unblocked by installer
- Later modification by enduser possible

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KNX Association: Secured access to KNX Installation



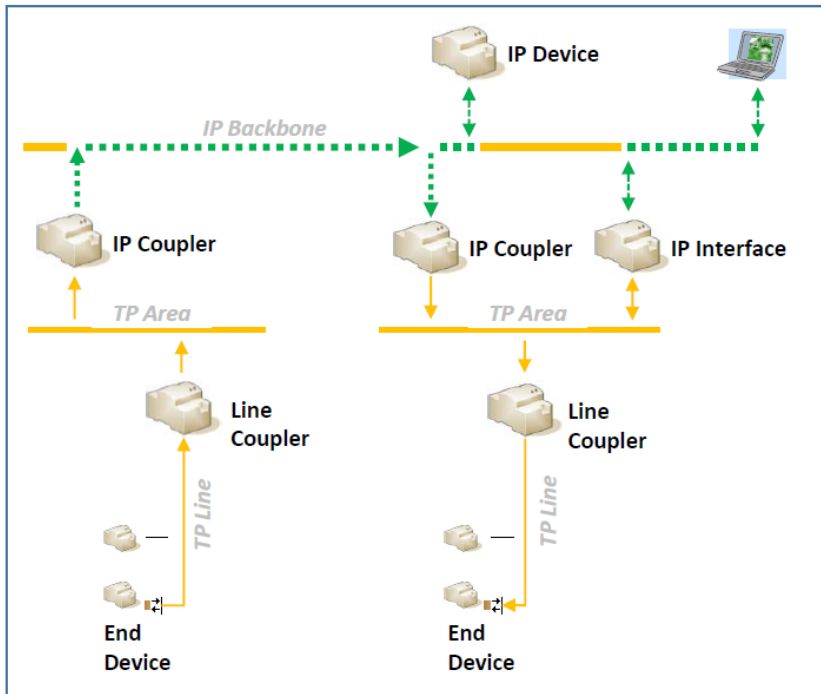
- The safety requirements of KNX installations are growing
- Critical and confidential information is increasingly transmitted due to extended application areas
 - Information on consumption data that should not be seen by third parties
 - Signals of locking systems (e.g. door contacts) which have to be protected against manipulation
 - KNX devices for critical functions, which only shall communicate with authenticated participants
- How to protect in future even better media and devices of KNX installations will be an increasing challenge
- For that reason KNX has developed the new system extensions **KNX IP Secure** and **KNX Data Secure**

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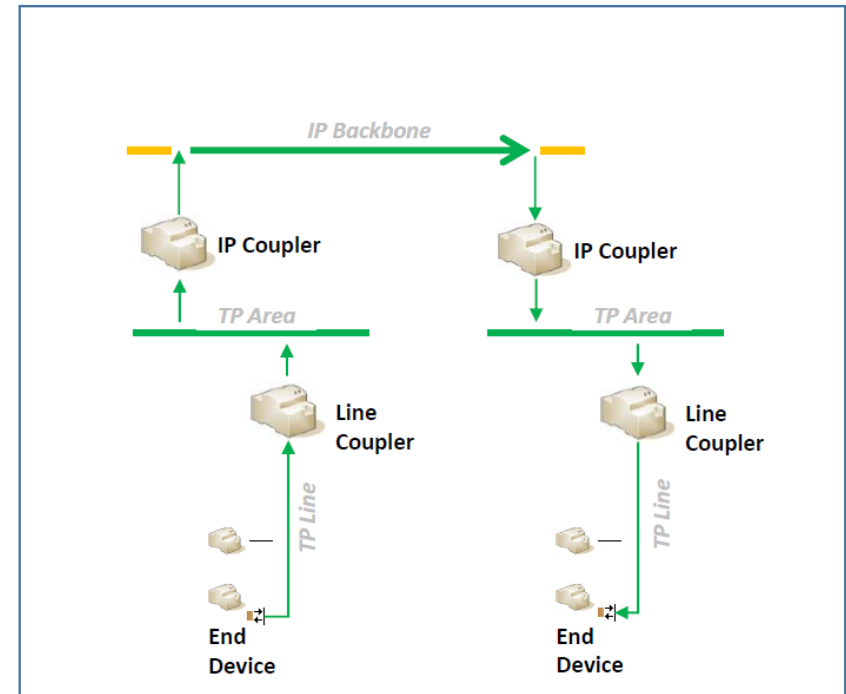
KNX Association: New "KNX Secure"

KNX Secure

KNX IP Secure

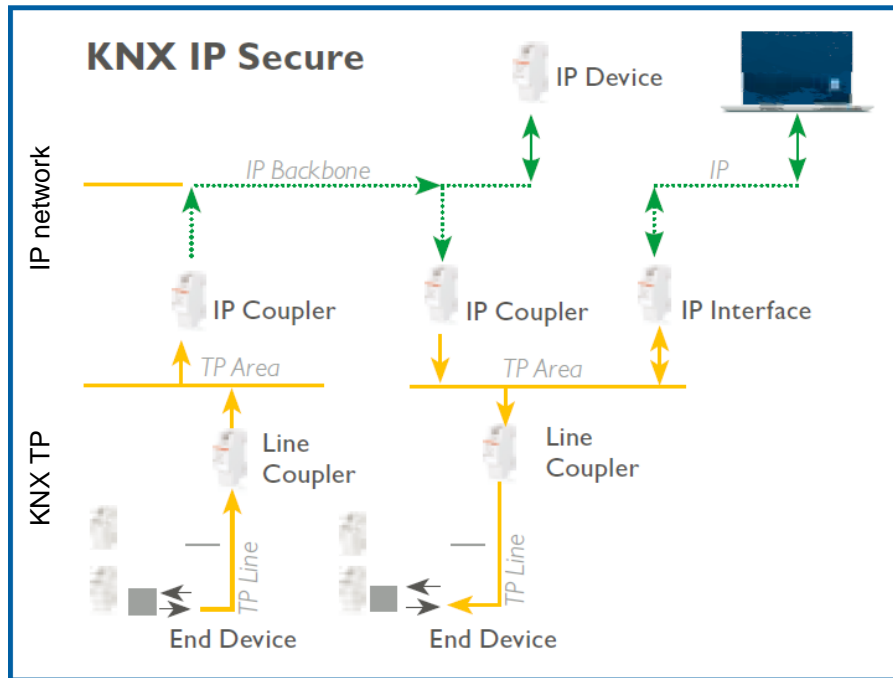


KNX Data Secure



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KNX Association: KNX IP Secure



All KNX telegrams between two (or more) IP Couplers are SECURED

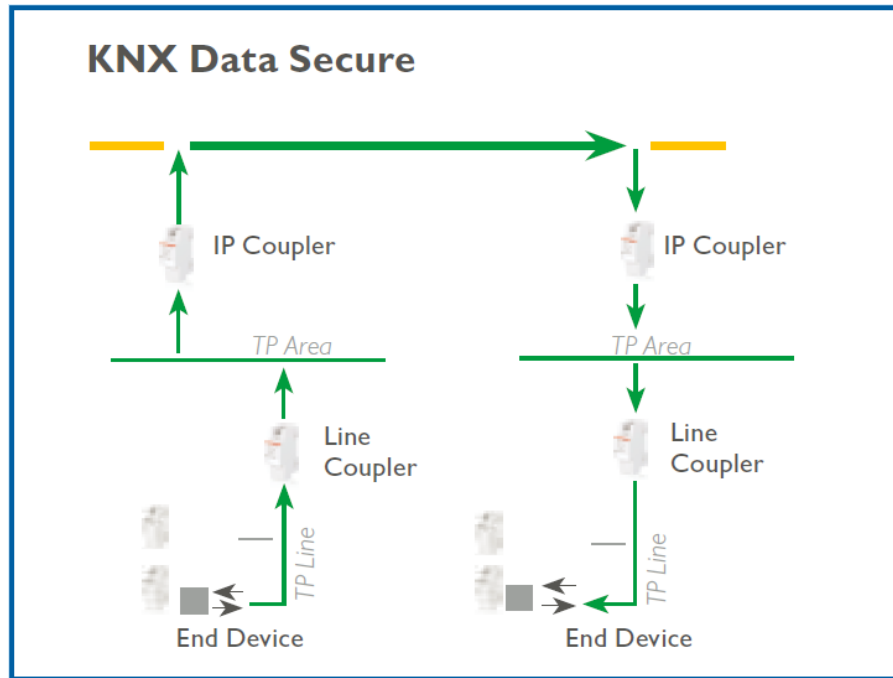
Please note:

KNX devices are to be adapted for KNX IP Secure by the manufacturer !

- Especially the possibility to remotely control KNX installations via the internet and/or via the wireless network WiFi requires additional protective measures
- Secured KNX data communication on IP level
- **KNX IP Secure** extends the KNX IP protocol that the transmitted data are completely encrypted → encryption of the entire KNXnet/IP frame
- Only KNX IP devices have to be considered (e.g. IP Router)
- KNX IP Secure for secured KNX transmission between buildings

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KNX Association: KNX Data Secure



The group communication of a particular sender (one/ more group objects) to another group object(s) is **SECURED**

Please note:

KNX devices are to be adapted for KNX IP Secure by the manufacturer !

- Secured data communication down to the KNX device on twisted pair
- **KNX Data Secure** authenticates and/or encrypts selected KNX telegrams independent of the medium
→ only encryption of the APCI and the payload
- The keys are allocated to the devices resp. to the objects via ETS
- KNX Data Secure secured KNX transmission within the building

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KNX Association: Secured access to KNX Installation

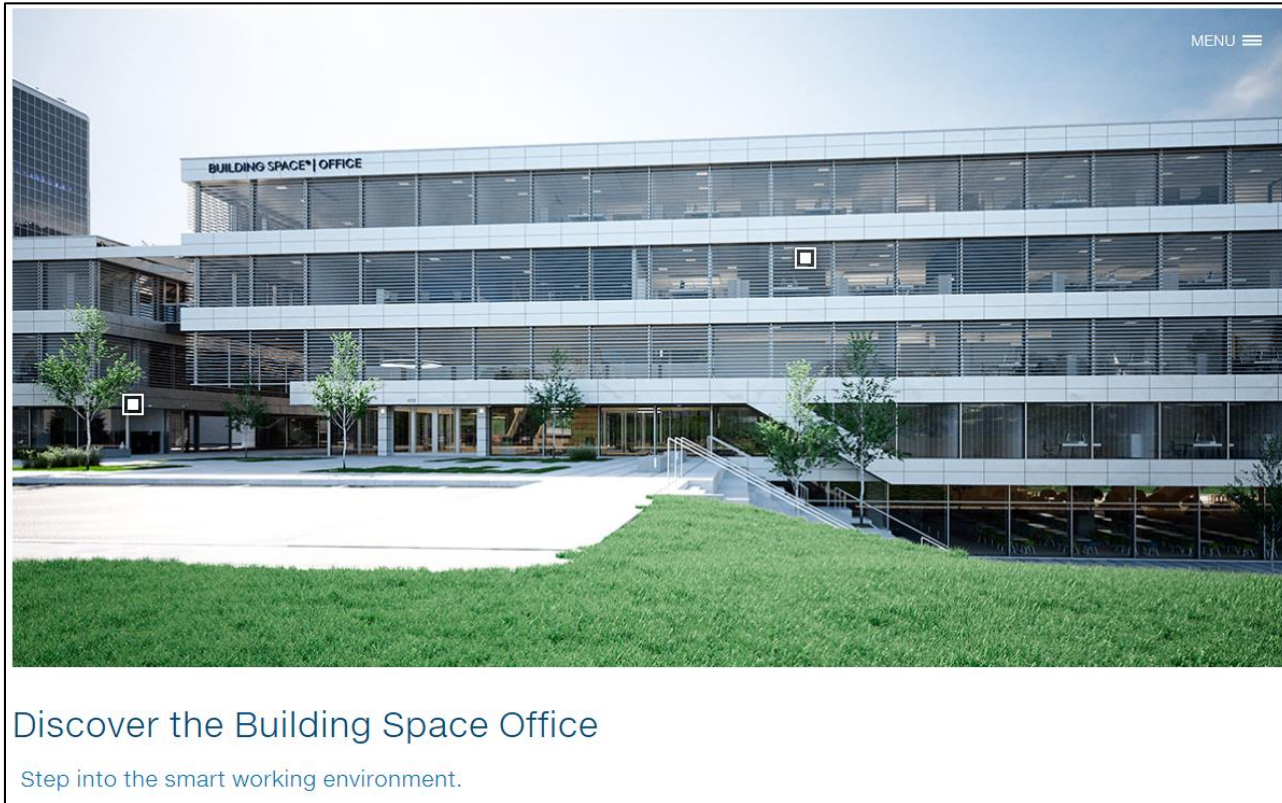
Important to know

- In a KNX installation KNX IP Secure and KNX Data Secure can be used in parallel
- In a KNX installation secured and unsecured applications can be used in parallel, i.e. not all devices have to be secured
- The new security functions can be integrated seamlessly in existing installations
- KNX Secure will be supported with ETS5.5
ETS handles key management/ distribution, establishes 'secure links' and downloads these links in KNX Secure devices
- Further information on the subject KNX security can be found on the website of the KNX Association
 - KNX Security Checklist
 - KNX Security Position paper



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Building Space Office

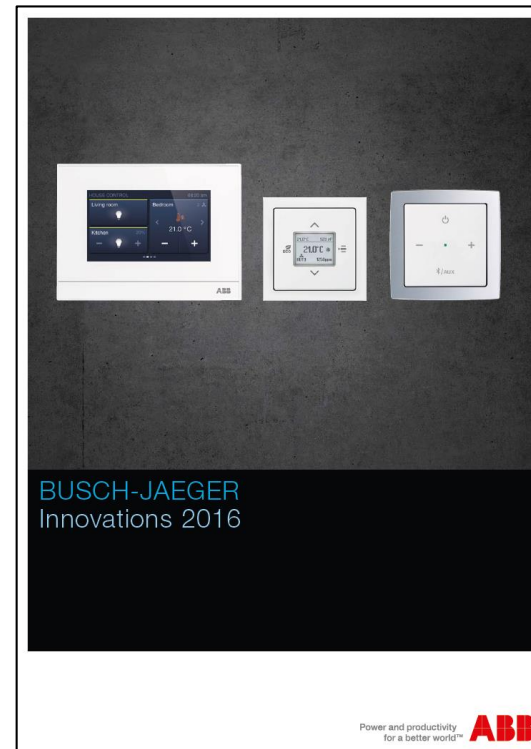
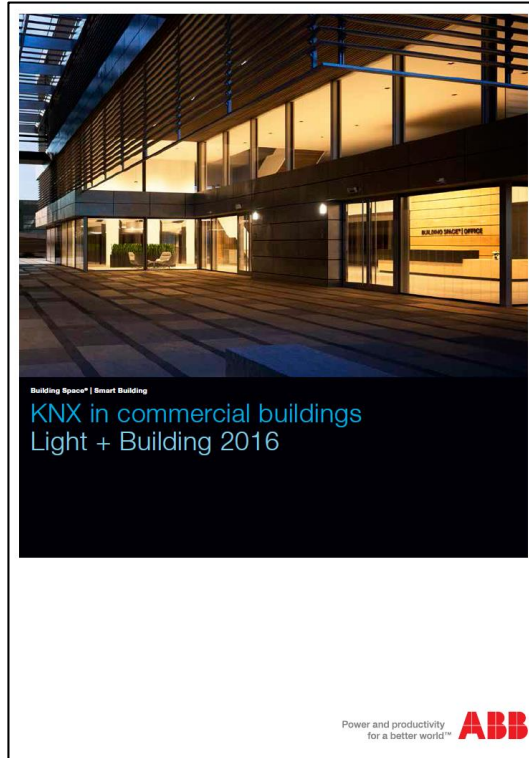


<http://new.abb.com/buildings/office>

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New Products Brochure: KNX in Commercial Buildings

- Order Number
 - 2CDC500124B0201
 - BJE 0001-0-1341/3.16/0502-D



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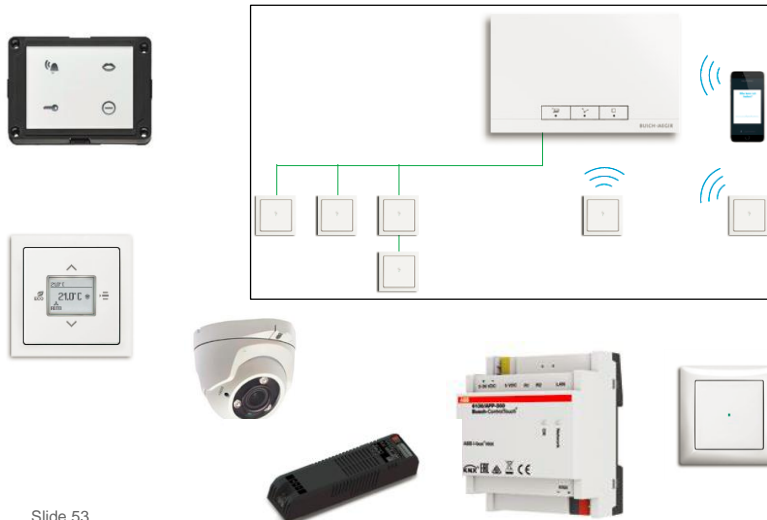
Next Webinar



- **Wednesday 27th of April 2016**
 - Morning 09:00 am Europe Time (Berlin, UTC + 2h)
 - Afternoon 03:00 pm Europe Time (Berlin, UTC + 2h)

- **News Light & Building 2016 – Part 2**

- ABB Welcome
- KNX sensors and dimmer
- KNX ControlTouch
- ABB-free@home wireless
- ...



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