



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"

Webinar "News Light + Building 2016" 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

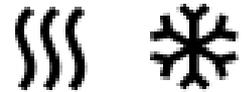
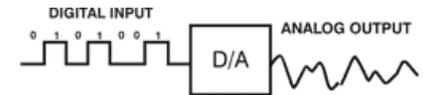
- Replacement of
 - AA/S 4.1
Analogue Actuator
 - AAM/S 4.1
Analogue Actuator Module
(Extension Module for AA/S 4.1)



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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



The screenshot shows the configuration window for a 1.1.5 Analogue Actuator, 2-fold, 0-10V, SM, Channel A. The interface includes a topology tree on the left and a main configuration area on the right. Two orange boxes highlight the 'Type of output' and 'Input format' fields. A dropdown menu is open for 'Type of output', showing options: 0...1 V, 0...5 V, 0...10 V, and 1...10 V. Another dropdown menu is open for 'Input format', showing options: 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, and 4 Byte [IEEE Floating Point] DPT 14.0XX. The main configuration area includes settings for 'Create own characteristic curve' (No), 'Definition of output range' (Input value for 0% output value: 0, Input value for 100% output value: 255), 'Enable functionality dimming' (No), 'Enable functionality 8-Bit scene' (No), 'Enable functionality forced operation' (No), 'Activate cyclical monitoring' (No), 'Behavior at bus voltage recovery' (As before bus voltage failure), 'Value read for object values at restart and bus voltage recovery' (No), and 'Sending of status values' (On request).

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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,0-2...

1.1.8 Analogue Actuator,4-fold,0-10 V,0-20 mA,MDRC > Channel A > A: General

General

Channel A

A: General

Channel B

Channel C

Channel D

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 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
- 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/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	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cyclical monitoring	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>

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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"/>

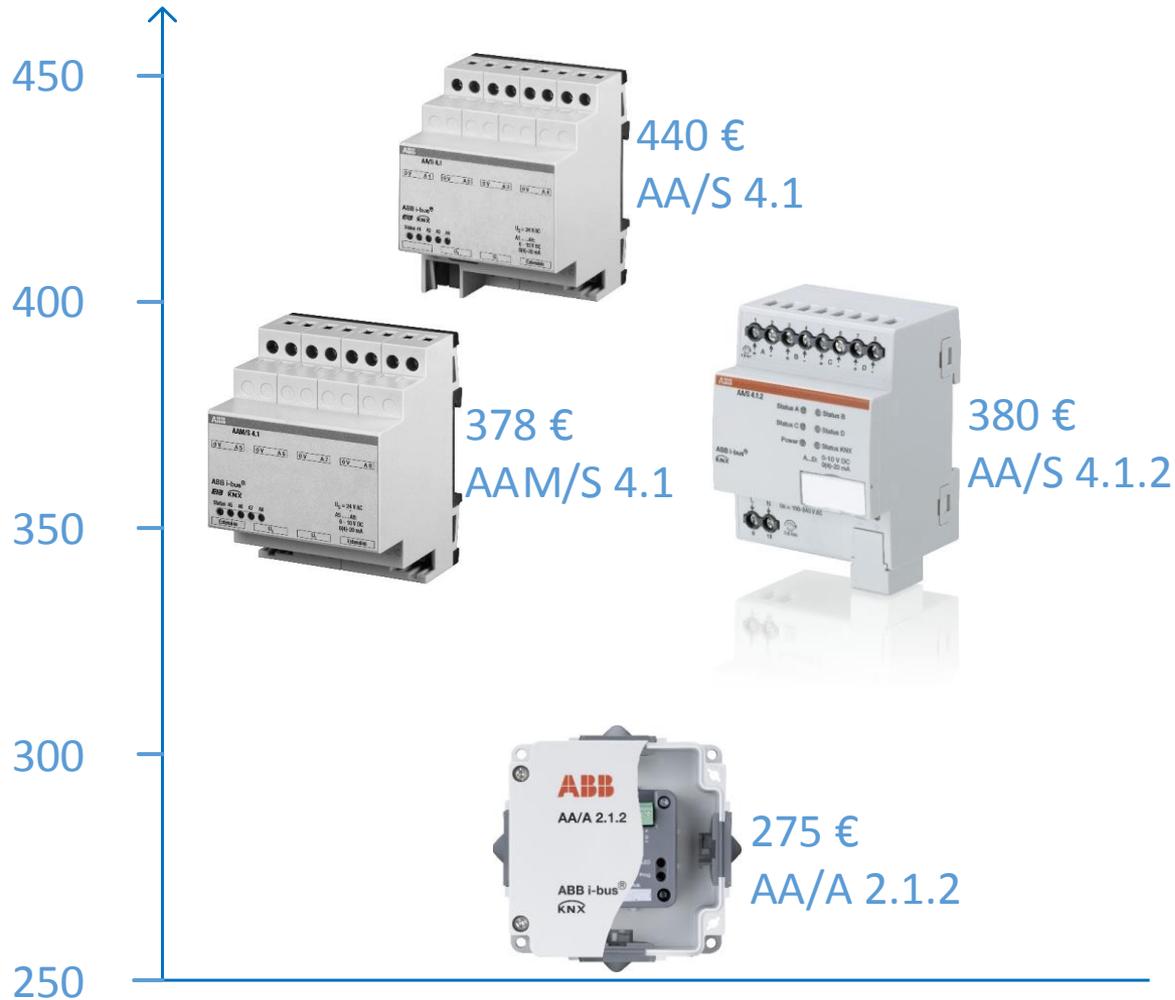
Input value	
Input value DPT 5.005	<input type="text" value="0"/> <input type="button" value="X"/> <input type="button" value="↵"/>
Value overwritten	<input type="radio"/>

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

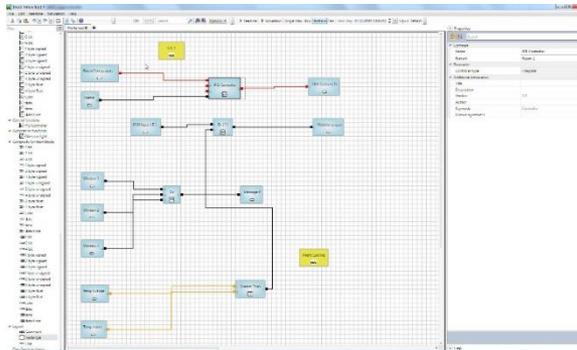
Device	AA/S 4.1.2	AA/A 2.1.2	AA/S 4.1
Status	July 2016	July 2016	Classic
Number of outputs	4	2	4
Mounting	MDRC	SM	MDRC
Power Supply	110-240 V AC	KNX	24 V AC
Voltage Output	0...10 V	0...10 V	0...10 V
Current Output	0(4)... 20 mA	-	0(4)... 20 mA
Extension Module	-	-	X

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Logic Controller ABA/S 1.2.1

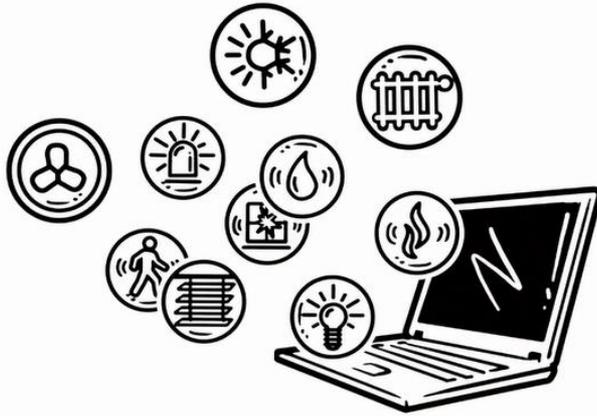


- The new Logic Controller is an extremely powerful device for almost unlimited customized logic functions
- It can easily and reliably accommodate altered or extended functionality requests during construction or usage of the building
- The Logic Controller opens new application for the KNX systems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

Webinar "News Light + Building 2016" EnOcean



Green. Smart. Wireless.
enocean

KNX

Webinar "News Light + Building 2016" 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

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

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

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 window title is "ABB i-bus KNX EG/A 32.2.1". The main area is titled "Gateway Mapping Remote EnOcean Teach-in".

On the left, there is a tree view under "EnOcean device nodes" containing "N01 : Window contact {D5-00-01}", which is expanded to show "In_" and "0 : Status_Contact".

On the right, the configuration for "Device node1 : Window contact (N01) {D5-00-01}" is shown. It includes "General device settings" with a dropdown for "Contact" set to "Report last value received by any device" and a "Hide common parameters in KNX objects" button. Below that, "Status_Contact" settings include a checkbox for "Only value changes in KNX object are forwarded" (unchecked) and a dropdown for "KNX periodic output update" set to "(disabled)".

At the bottom, there are buttons for "Reset Configuration" and "Import Catalogue". The status bar shows "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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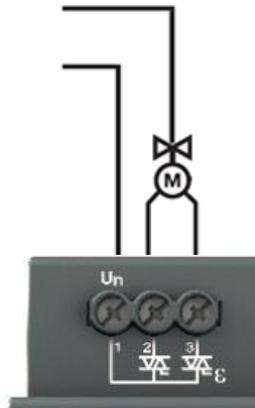
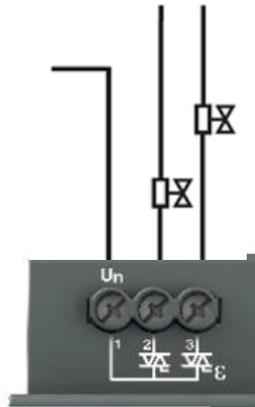
free@home: Fan Coil Actuator FCA-M 2.3.1



- 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

Webinar "News Light + Building 2016" 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)

Webinar "News Light + Building 2016" 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)

Webinar "News Light + Building 2016" free@home: Weather Station WS-1



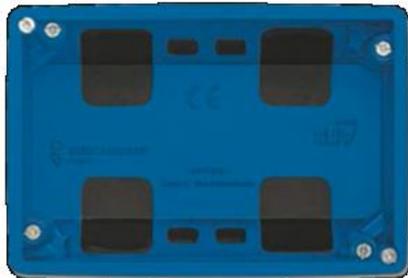
- Wind speed measuring range 2 - 30 m/s
- Voltage: 110 - 230 V AC
(only or rain sensor heating)
- Frequency: 50 - 60 Hz
- Brightness: 1 Lux - 100000 Lux
- Protection class: IP 44
- Temperature range -20 °C to 55 °C

Webinar "News Light + Building 2016" 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

Webinar "News Light + Building 2016" 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)

Webinar "News Light + Building 2016" free@home



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

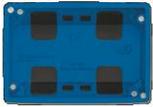


- Weather station WS-1
 - Available 2016
 - List price in Euro: 510,-

Webinar "News Light + Building 2016" free@home



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



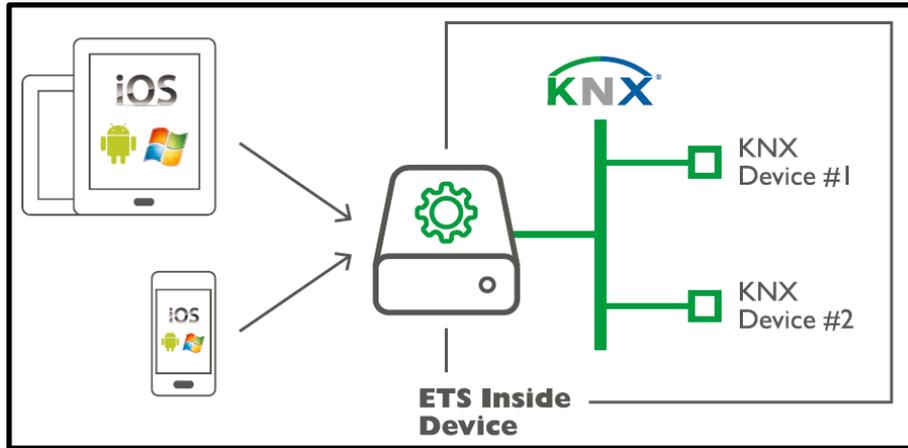
- Mounting Box DP4-F
 - Available June 2016
 - List price in Euro: 25,50



- 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



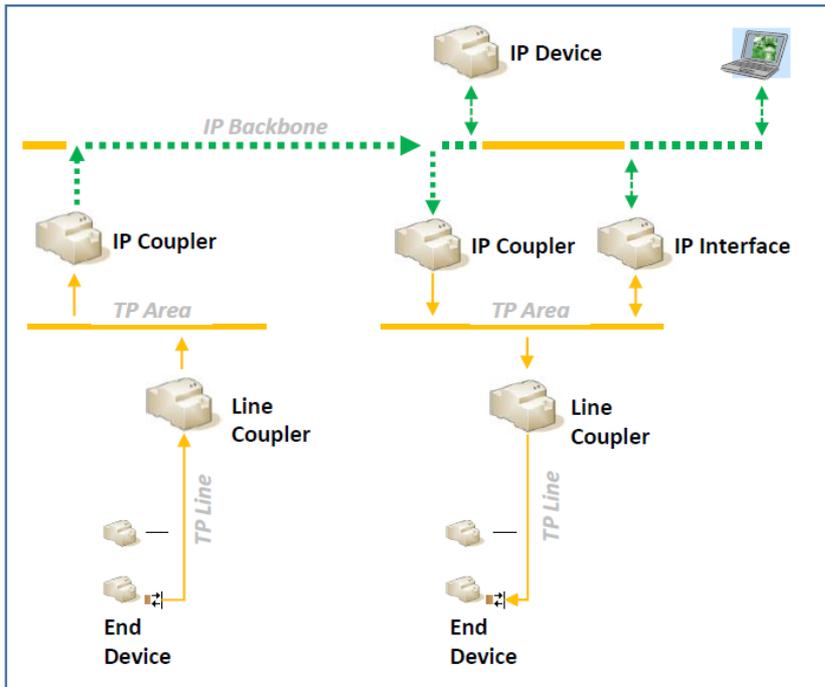
- The safety requirements of KNX installations are growing
- Critical and confidential information is increasingly transmitted due to extended application areas
 - Information on consumption data that should not be seen by third parties
 - Signals of locking systems (e.g. door contacts) which have to 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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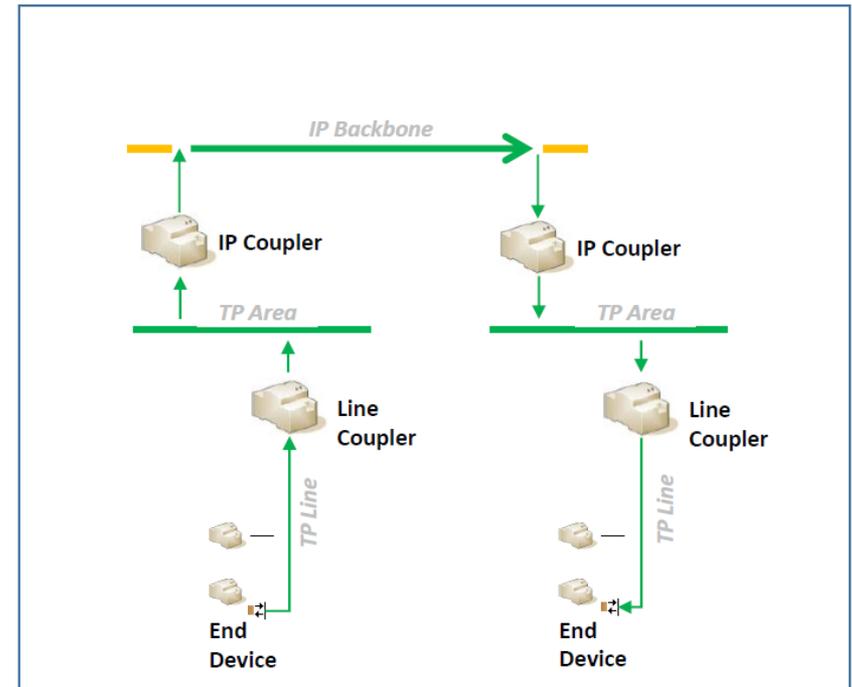
KNX Association: New "KNX Secure"

KNX Secure

KNX IP Secure

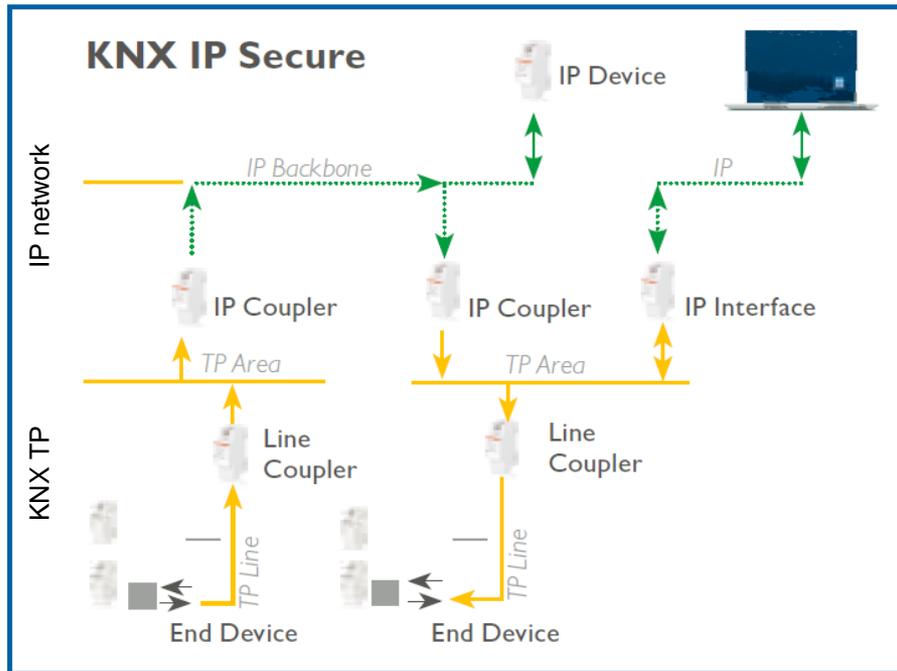


KNX Data Secure



Webinar "News Light + Building 2016"

KNX Association: KNX IP Secure



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

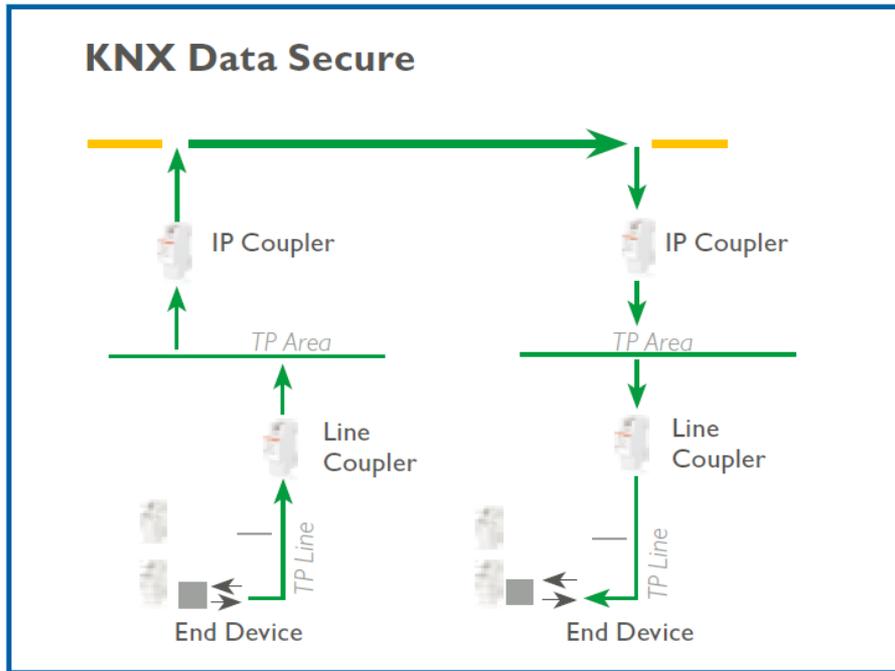
Please note:

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



Discover the Building Space Office

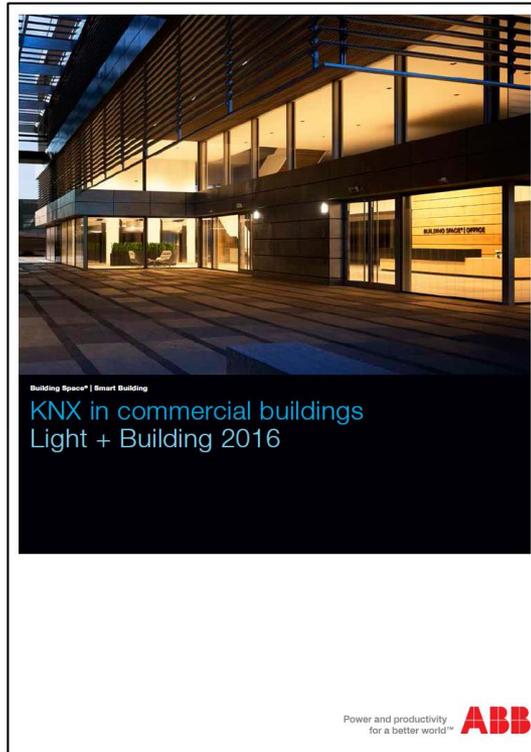
Step into the smart working environment.

<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



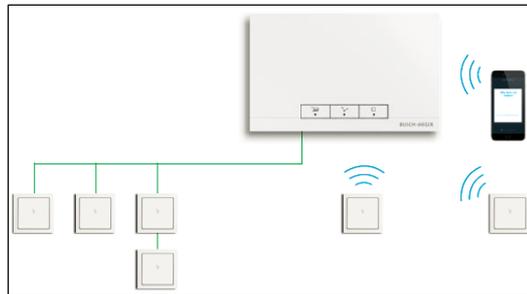
Webinar "News Light + Building 2016" Next Webinar



- **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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