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ABB-AccessControl

Webinar – Competence Center Europe – Smart Buildings

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Home- and Building Automation by ABB

One more product family in ABB's Home- and Building Automation portfolio





ABB-AccessControl Introduction Portfolio System architecture Commissioning





Introduction and general product information

Introduction and general product information

smart IP

- IP connectivity for a holistic building automation solution
- Three independent systems can be operated together
 - Door Entry System
 - Video Control
 - Access Control
- Connection to building automation (free@home / KNX)



Introduction and general product information

Global access control solution for a smarter door

Why?	 You as resident or home owner, can an unlock the door and get in even if you forget your keys. can unlock the door remotely so a friend can come into your house to take care of your pets or plants, or for whatever reason, while you're away. can let the artisan or the house keeper into your home remotely when he arrives. With an electronic keyless key, you don't have to take your time off and wait for someone to show up. You as company owner, can let your employee, artisan, the cleaner worker open the door, knowing where, when, who has unlocked the doors. can manage all permissions, digital keys, doors locally or remotely. 						
For whom?	Company owner, Public institutions (Multi-Apartments) Home owner						
How?	Digital cylinder : Locks in retrofit design with EU, Swiss, Scandinavian and ANSI profile support Smart Access Point : Standalone management device to support up 600 devices and 2000 Users RF Repeater: Increases the wireless signal distance to Smart Access Point Pro RF/IP Gateway: Increases the number of supported doors and increase the distance to Smart Access Point Pro/Lite.						

Introduction and general product information

Main doors



Side doors



Interior doors



Introduction and general product information

USPs (Unique Selling Points)

- Secure keyless access
- Fitting for plug-in locks according to EU, US and Swiss standards
- Battery operation
- Can be unlocked in case of an emergency
- Firmware update online possible
- Protection class IP66
- Many fields of application
 - Single-family and high-rise buildings
 - Office buildings
 - Industrial buildings and facilities
 - Hotels
 - Hospitals and retirement homes



Age of the property

- New building
- Renovation

Commercial buildings

Building type

House

Apartment



Functions

- Secure keyless entry
- Individual access control

Webinar "ABB-AccessControl" Portfolio

Portfolio

Smart Access Point Pro



RF/IP Gateway + RF Repeater



Cylinders



Accessories



Portfolio

Smart Access Point Pro



Portfolio

Smart Access Point Pro

- Management software for commissioning and operation
- Browser client
- 16 cylinders can be connected directly
- Up to 600 cylinders can be controlled with one Smart Access
 Point
- Powered by PoE or external power supply
- Important: the old Smart Access Point Lite (D04012-03) does not support AccessControl. The new version D04013-03 can be combined with the RF/IP Gateway to integrate AccessControl devices

Smart Access Point Lite	D04012-03	D04013-03			
Smart Access Point Pro	D040	011-03			



Portfolio

Cylinders – Main features

- Every door becomes smart
- Define who is allowed in, when and where
- Your smartphone becomes the key
- Control and open the door from anywhere
- See who opened the door
- Up to 600 doors can be managed centrally
- More then 2000 Users and 64 User groups
- Only ABB Tags (D081WH-0x, D081BK-0x, D081GY-0x) can be used in an AccessControl System





Portfolio

Technical details





Portfolio

European profile half cylinder

European cylinder with thumb turn









Portfolio



Portfolio



Portfolio



Portfolio

RF/IP Gateway (D04031 – 2TMA400260W0013)

 Scale up wireless access control system topology easily 					
 One RF/IP gateway can support another 16 cylinder 					
 Maximum 64 gateways can be connected 					
– Dimension: 107 x 109 x 30					
- Radio interface: IEEE 802.15.4 2.4GHz radio					
 Power supply: 24 V DC 					
– Environment:					
 Temperature: -10°C to +45°C 					
Protection type: IP30					
Vandal proof: IK07					
· Humidity: 0 to 95%, non-condensing					



Portfolio

RF Repeater (D04021 – 2TMA400260W0003)

- Scale up system topology easily
- Easy and fast configuration
- Different power solution to meet different requests
- Firmware update remotely
- Dimension: 90 x 90 x 28 mm
- Radio interface: IEEE 802.15.4 2.4GHz radio
- Power supply: 24 V DC, together with ABB power adaptor
- Environment:
 - Temperature: -10°C to +45°C
 - Protection type: IP30
 - Vandal proof: IK07
 - Humidity: 0 to 95%, non-condensing



Portfolio

Accessories

- Tag
 - The tag is based on RFID chip technology
 - Dual tag for AccessControl and Welcome IP
 - Available in electronic cylinders and ABB outdoor readers
 - With a special encryption to ensure secure controlled access
- Maintenance tool
 - A professional tool to dismantle / fasten the knob, to install in new door, or replace battery
- Maintenance Card \rightarrow for teaching in new cylinders
- Construction Card → for opening not integrated cylinders in factory mode



System architecture

System architecture

Prerequiste

Standard door fitting:

Assembly of the "electronic locking cylinder" possible

Door security fitting with core pulling protection / cylinder protection:

Assembly of the "electronic locking cylinder" **not possible**



System architecture – Installation

Loosen the screw & remove old cylinder

Insert electrical cylinder and fix the thumbturn





System architecture – Installation

Simply measure and choose the right cylinder size



A (mm)

		30	35	40	45	50	55	60	65	70
в (30	X*	х	х	х	х	х	х	х	х
mm	35	х*	х	х	х	х	х	х	х	х
2	40	х	X*	х	х	х	х	х	х	х
	45	х	х	х*	х	х	х	х	х	х
	50	х	х	X*	х	х	х	х	х	х
	55	х	х	х	х	х	х	х	х	х
	60	х	х	х	х	х	х	х	х	х
	65	х	х	х	х	х	х	х	х	х
	70	х	х	х	х	х	х	х	х	х

System architecture

Topology





System architecture

Topology



System architecture

Topology



Planning and Installation

Planning and Installation

Communication

- All cylinders are connected to the Smart Access Point Pro or to a RF/IP Gateway via bluetooth
- Range from cylinder to end device: 10 meters
- Range can be extended with a RF repeater
- Up to 3 repeaters can be used in one line to extend the RF range to a maximum of 40 meters
- If more than 40 meters is needed a RF/IP Gateway has to be used



Planning and Installation

Capacity and Range

- System capacity: 600 devices in the commissioning software of the Smart AP
- Per Smart Access Point Pro:
 - 16 cylinder
 - 3 RF repeater
 - 64 RF/IP gateway
- Per RF repeater up to 16 cylinder in one line
- Per RF/IP gateway
 - 16 cylinder
 - 3 RF repeater
- Range:
 - Between 2 devices: 10 meter
 - In one RF line: 40 meter





Planning and Installation

Maximum setup

- From technical point of view 64 RF/IP Gateways * 16 cylinder = 1024 devices can be connected
- The Smart Access Point can only handle up to 600 devices
- The maximum range of 10 meters or 40 meters will be reduced, if walls or other interferences are between the devices
- The use of RF/IP gateways is highly recommended, if possible interferences are in the installation area



Planning and Installation

Practical example – Single family house

- If no further system components (like Welcome IP) are used, a 24 V DC power supply for the Smart Access Point should be used
- The Smart AP Pro should be placed at a central place to cover all installed cylinder



Planning and Installation

Practical example – Multi family house

- In a multi family house the Smart Access Point Pro should be placed at a central place to cover as many cylinders as possible
- If the entries are too far away an additional RF repeater can be used
- As soon as more than one floor is available an IP network should be setup to use also the RF/IP gateway



Planning and Installation

Practical example – Multi family house

- In a multi family house the Smart Access Point Pro should be placed at a central place to cover as many cylinders as possible
- If the entries are too far away an additional RF repeater can be used
- As soon as more than one floor is available an IP network should be setup to use also the RF/IP gateway





Planning and Installation

Practical example – Commercial building

- A big office building should be equipped with ABB-Access Control
- The Smart AP Pro will be placed near to the entry
- On each floor one RF/IP Gateway is installed and connected to the technical network
- In the floor RF repeaters are used to extend the Bluetooth range


Commissioning

Commissioning

General process

- 1. Initial setup of the Smart Access Point Pro
- 2. Adding AccessControl devices to the installation
- 3. Building structure
- 4. Configuration
- 5. User Management



Commissioning – Initial setup

Connect your PC with the Smart Access Point

- Turn on the Smart Access Point Pro
- Connect your computer with the WLAN of the Smart AP
- Open the configuration via the standard IP address "192.168.3.1"
- Alternative: connect your PC via LAN with the Smart AP

PoE)))		(
	SmartAP		× +		
	$\leftrightarrow \ \ $	A Nicht sicher	192.168.3.1	1/#	

Commissioning – Initial setup



Initial setup

Commissioning – Initial setup

Building type

- Residential
 - "DHCP mode" → Smart Access Point is connected to the router
 - Mainly for single family application
- Functional
 - Static mode → Smart Access Point is connected to the technical network and works with the static IP-address 10.0.0.1
 - An additional router can be used, if the building owner want to use internet functions or DHCP

Please choose your building type Residential (for single family application) Functional (for multiapartment/commercial application) <

Commissioning – Initial setup

Location

- Settings for date and time (location)





Commissioning – Initial setup

Wi-Fi access point mode

- Password for the Wi-Fi of the Smart Access Point Pro can be changed
- Minimum requirements:
 - At least 10 characters
 - Uppercase and lowercase letters
 - At least one special character
 - At least one number
- Don't forget the password!

Wi-Fi access point mode settings





Commissioning – Initial setup

Connection type

- Connection to the local network
- If no connection to the local network is planned, select a random type





Commissioning – Initial setup



Commissioning – Initial setup

Creation of the admin

- User account for commissioning the system
- Minimum requirements:
 - At least 10 characters
 - Uppercase and lowercase letters
 - At least one special character
 - At least one number

Please create your user account



Commissioning – Initial setup

Options for Reset

- Without registration the system can be reset without security verification
- With registration an additional mail with a security code will be send out, before deleting the system



Commissioning – Initial setup

Connection to MyBuildings Portal

- For security verification and remote access
- Can be added later also

Please connect to MyBuildings							
User name							
Password							
Friendly name							
Remote access 🗌 Ena	ble						
If you do not have a MyBuildings account yet, you can register here.							
<	Skip						

Commissioning – Initial setup

Please	enter the c	bevice name	9
Device name	Smart Ac	ccess Point Pro	
	<	>	

Overview

Setting overview						
Language	English					
Time zone	(UTC+01:00) Amsterda					
SSID	SmartAP_072C					
Connection type	LAN					
IP address	192.168.0.249					
Subnet mask	255.255.255.0					
Default gateway	192.168.0.1					
<	Finish					

Commissioning – Initial setup

Connection to the Smart AP Pro (residential)

- Residential mode
 - 1. Via Wi-Fi
 - new Wi-Fi password has to be used
 - IP-address 192.168.3.1
 - 2. Via LAN
 - Connect PC via LAN with Smart AP Pro or technical network
 - IP-address 192.168.0.x

PLEASE LOGIN	
🛔 installer	

Commissioning – Initial setup

Connection to the Smart AP Pro (functional)

- Functional mode
 - 1. Via Wi-Fi
 - new Wi-Fi password has to be used
 - IP-address 192.168.3.1
 - 2. Via LAN
 - Connect PC via LAN with Smart AP Pro or technical network
 - IP-address 10.0.0.1

PLEASE LOGIN	
anstaller	

Commissioning – Initial setup

Overview Smart AP Pro interface

- Device configuration: adding cylinder, RF repeater and RF/IP gateways
- Building Structure:
 - Setup of all buildings
 - Setup of all floors and rooms
- RF Wireless Connection: placing and linking all devices
- User Management: Creating users, access rights, tags, ...

			PLACE + LINK	USER MANAGEMENT	ACTIONS		DOOR ENTRY SYSTEM	
	Design a building by creating floors and rooms	Configure the devices of the access control system e.g. Cylinder, repeater	Locating and linking devices	Add and edit users. Create user groups	Create and edit actions	Create time control	Configurate door entry system devices, e.g. indoor station, outdoor station	
L installer							Device configuration	C Preferer

Commissioning – Adding AccessControl devices

Adding cylinders - preparation

- Same process for all cylinders
- Smart Access Point Pro must be configured
- Preparation
 - Note the serial number of the cylinder
 - Construction card available
 - Insert the batteries
 - Open the configuration of the Smart AP





Commissioning – Adding AccessControl devices

Device Configuration

- AccessControl devices must be added to the installation via the device configuration menu
- Make sure, that the cylinder and the Smart Access Point Pro / RF/IP Gateway are in range
- Open the cylinder with the mounting tool and note the serial number
- Insert the battery and note down the serial number
- Close the cylinder again
- Open the "device configuration" in the Smart Access Point Pro

HOME ዐ 🖓 SOS 🕥 📜			< DEVICE CONFIGURATION >
			LIST VIEW
Device type		SmartAP(1)	
SmartAP(1)	>	#105807A7F03072C(WZB) Smart Access Point	>
Grunder(0)	>	Building1>Floor1>Hall	
Repeater(0)	>		
RF/IP gateway(0)	>		
IP camera(0)	>		
Outdoor station(0)	>		
Indoor station(0)	>		
D- IP actuator(0)	>		
Guard unit(0)	>		

Commissioning – Adding AccessControl devices

Device Configuration - Cylinder

- Navigate to "Cylinder"
- Click on the "Add" button on the bottom

+

Enter the serial number and click on "Save"

Device type	Cylinder(1)	Cylinder
SmartAP(1)	#xxxxxxxx() Cylinder	Serialnumber: xxxxxxxxxxxxx Short ID:
Cylinder(0)		Software version:
Repeater(0) >		Opdate inmiware
RF/IP gateway(0)		Building
IP camera(0)		<not allocated=""></not>
Outdoor station(0)		Floor
Indoor station(0)		<not allocated=""></not>
O→ IP actuator(0) >		Room <not allocated=""></not>
Guard unit(0)		Parameter
		Serial number
		11390000000D7
		Channels
		RF connection >
		Door opener >
		Knob reader >
		Office mode >
		Emergency card
	+ 🛃	× V Save

Commissioning – Adding AccessControl devices

Device Configuration - Repeater

- Open the "device configuration" in the Smart Access Point Pro
- Navigate to "Repeater"
- Click on the "Add" button on the bottom

+

Enter the serial number and click on "Save"

HOME ዐ ନ SOS <table-cell> 🖡</table-cell>		< DEVICE CON	IFIGURATION	
		LIST	VIEW	
Device type	Repeater(1)		Repeater	Ū
SmartAP(1) SmartAP(1) SmartAP(1)	#xxxxxxxxxx() Repeater	>	Serialnumber: xxxxxxxxxxx Short ID: Software version:	
			Update fi	rmware
Hepeater(0)			Position	
RF/IP gateway(0)			Building	
JP camera(0)			<not allocated=""></not>	~
Outdoor station(0)			Floor	
Indoor station(0)	_		<not allocated=""></not>	*
			Room	
O IP actuator(0)			<not allocated=""></not>	~
Guard unit(0)			Parameter	
			Serial number	
			24185000000068	
			Channels	
			RF connection	;
	+	.	×	✓ Save

Commissioning – Adding AccessControl devices

Device Configuration - RF/IP Gateway

- Open the "device configuration" in the Smart Access Point Pro
- Navigate to "RF/IP gateway"
- Click on the "Search" button on the bottom

 \circ

- All available RF/IP gateways, which are located in the same network like the Smart Access Point Pro will be displayed
- Click on "Save" to add the device to the installation

HOME 🚺 🖓 SOS 🏚 🖡			< DEVICE CON	FIGURATION
			LIST	VIEW
Device type		RF/IP gateway(1)		RF/IP gateway
SmartAP(1) Particle Cylinder(1) Repeater(1) RF/IP gateway(0) IP camera(0) Outdoor station(0) Indoor station(0) IP actuator(0) Guard unit(0)	> > > > > > > > > > > > > > > > > > >	#142807A7F030B3E(ZOV)	>	Serialnumber: 142807A7F030B3E Short ID: ZOV Software version: V1.01 Signed status: unsigned License Agreement for Software Update firmware Update firmware Network information MAC address: 80:7A:7F:03:0B:3E IP address: 192:168.0.235 Subnet mask: 255.255.255.0 Default gateway: 192:168.0.1 Position Building <not allocated=""> * Floor <not allocated=""> * Poor <not allocated=""> * Parameter DHCP Enable</not></not></not>
		0	£	× ✓ Save



Commissioning – Building structure

Building structure

- Easy creation of buildings and floor
- Multi-buildings and multi-floors can be created for fast setup
- Similar to free@home



Commissioning – Building structure

Floors

더 Factory 🗸	Î		더 Floor1	~	
		Citics B111	€ Office B113		← (m)
Floor4 Floor3 Floor3 Floor2		rtan dia mangana			
Floor1 >		🗲 Office B112		🖋 Kitten	✔ Batheom 1.1
Floor Multi-floor			Room rect Room L Outdoor a	Irea Multi-room	

Rooms

Commissioning – Configuration

Adding cylinders

- Navigate to menu "RF wireless connection" (the building structure must be created before!)
- Drag and drop the cylinder icon to the room, which you have created before
- All available cylinders will be displayed with their serial number





Commissioning – Configuration

Adding cylinders

- The cylinder will be displayed with an red exclamation mark
- This means, that the cylinder is "offline", so not connected to the Smart Access Point or an RF/IP Gateway
- If the battery is low or the distance between cylinder and Smart AP is too high, the same error will be displayed



Commissioning – Configuration

Adding cylinders

- Select the cylinder now and link it with the RF device, to which it should be connected to start the connection process





Commissioning – Configuration

Adding cylinders

- The pairing process starts now
- Hold the maintenance card on the cylinder
- The cylinder will blink now several times yellow
- After successful pairing, the cylinder will light up green
- If the cylinder lights up red, the pairing process failed



Commissioning – Configuration

Adding cylinders

- The pairing process starts now
- Hold the maintenance card on the cylinder
- The cylinder will blink now several times yellow
- After successful pairing, the cylinder will light up green
- If the cylinder lights up red, the pairing process failed



Commissioning – Configuration

Adding cylinders

 The Smart Access Point will check now, if the cylinder is available in the system



Commissioning – Configuration

Repeater

- Navigate to menu "RF wireless connection"
- Drag and drop the repeater icon to the room, which you have created before
- All available repeaters will be displayed with their serial number





Commissioning – Configuration

Repeater

- Click on the repeater and link it the Smart Access Point Pro
- The repeater and the Smart Access Point Pro are now connected



Commissioning – Configuration

Repeater

- Repeaters must be unpaired before you can delete them
- To unpair the repeater and the Smart Access Point Pro the serial number of the repeater is needed again

Confirm unpairing operation						
Please enter the serialnumber of device for confirmation.						
Serialnumber						
×	✓					

Commissioning – User management

User management

- Management of all users, transponders und access rights
- Adding new users
- Adding new user groups
- Adding transponder and access rights



Commissioning – User management

Adding new users

- New users can be added via the "plus" icon on the top
- For each user a user name, first name, last name and a password has to be defined
- User roles:
 - Admin
 - Master
 - Basic
 - 3rd party
- Temporary access for 3rd party

ADD NEW USER				
New user				
User name				
First name				
Last name				
User role	Admin			~
Password				
Repeat password				
×		٧	/	



Commissioning – User management

Parameter for user

- User can be added to a user groups
- Management of tags and cylinder
- Pairing mobile device to open the door



Commissioning – User management

User groups

- User groups can be used to facilitate the management of access rights for common areas
- Example: all employees should have access to the main area of a hotel


Commissioning – User management

New user groups

- New user groups can be added via the "plus" icon on the top
- Each user group needs a name and an icon

New use	r group	
Group name	Employees	
Group icon		~



Commissioning – User management

New user groups

- After adding a new user group the detailed settings can be done
- Users: adding users to the group → all added users have the same rights
- Time profile: adding time based access rights
- Cylinder: which cylinder this user group is allowed to open
- IP camera / outdoor station: settings for Welcome IP



Commissioning – User management

New user groups – Time profile

- Limited access to cylinders for user groups
- Example:
 - Employees are only allowed to enter the building between 6 a.m. and 10 p.m.
 - Cleaning employees are only allowed to enter the rooms between 8 a.m. and 1 p.m.





Commissioning – User management

Assignment

- Easy assignment of the users

INFORMATION				
Would you like to add user to this user group?				
×	✓			

E Employees	E LIST VIEW	
Assigned	Users	
	Assigned Basic New(newhasic)	
Base, New Master New	Master,New(newmaster)	
Not assigned		
	Not assigned	
3thParty New Admin.New installer	3thParty,New(new3thparty)	
	Admin,New(newadmin)	
	installer	
i j j j j j j j j j j j j j j j j j j j		



Commissioning – User management

Authentication / Tags

- Includes all transponder for AccessControl and Mifare cards for Welcome IP
- To add a new tag the user must be selected first
- New tags can be added via the menu "Authentication" and "Add authentication"





Commissioning – User management

Authentication / Tags

- Select card type
 - Left: for access control
 - Right: for outdoor station
- One tag can be used for access control and for an outdoor station at the same time
- Two authentications needed (AccessControl + Welcome IP OS)

ADD NEW AUTHENTIFICATION METHOD Card type Add authentication For access control Card type Add authentication For outdoor station

Commissioning – User management

Authentication / Tags

- Needed information:
 - Name (unique)
 - Validity period (limited/unlimited)
 - Card reader (cylinder)
 - Card number (will be added automatically after holding the tag next to the cylinder)
- The tag is assigned to the user now
- The user can now open all assigned cylinder with this tag

ADD AUTHENTICATION New identity authentication Card name RFID Card type \mathbf{v} Limited validity Validity period ~ Start 31 31 End Card reader Select reader Card number × \checkmark



Commissioning – User management

Authentication / Tags – Emergency function

- If the Smart Access Point is offline or there is no RF-connection between the cylinder and the Smart Access Point, the user will not be able to open the door
- Therefore each cylinder can store up to 100 "emergency tags", which will also work in case of an offline Smart AP
 - Open the device settings and select the cylinder
 - Click on "Emergency card"
 - Add the tags, which should also work in a case of emergency, to the cylinder

LIST VIEW					
Device type	Cylinder(1)	Cylinder	Emergency card		
SmartAP(1)	#11390000000007(BOQ)	Serialnumber: 11390000000007 Short ID: BDD	Emergency and		
Green Cylinder(1)		Software version:	Emergency card		
Repeater(0)		Update firmware			
RF/IP gateway(0)	RF/IP gateway(0) > IP camera(0) > Cutdoor station(0) > Indoor station(0) > P actuator(0) > IP actuator(0) > Guard unit(0) >	Position			
IP camera(0)		<not allocated=""></not>			
Outdoor station(0)		Floor			
Indoor station(0)		chor anocareos			
O- IP actuator(0)		<not allocated=""></not>			
Guard unit(0)		Channels			
		RF connection >			
		Door opener >			
		Knob reader			
	Office mode >				
		Emergency card			



Summary

Summary

ABB-AccessControl

- Suitable for many different applications like private houses or mid-size commercial buildings
- Easy to understand topology
- Fast commissioning process
- Up to 600 devices, 2000 users and 64 user groups can be controlled and managed
- Compatible with Welcome IP, free@home and KNX



Training Material

Training & Qualification Database

- The database contains extensive training content
 - Presentations
 - Video tutorials
 - Webinar slides and videos
 - and more ...
 - <u>https://go.abb/ba-training</u>
 - <u>ww.abb.com/knx</u> (→ Services & Tools → Training and Qualification → Training Database)
- Training and Qualification

YouTube

- Channel "ABB Home and Building Automation"
 - <u>https://www.youtube.com/user/ABBibusKNX</u>





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