Thorsten Reibel, Juergen Schilder, Ilija Zivadinovic – Global Application and Solution Team

December 2016

ABB GPG Building Automation Webinar "ABB-free@home® wireless"

Webinar “ABB-free@home® wireless”

Introduction

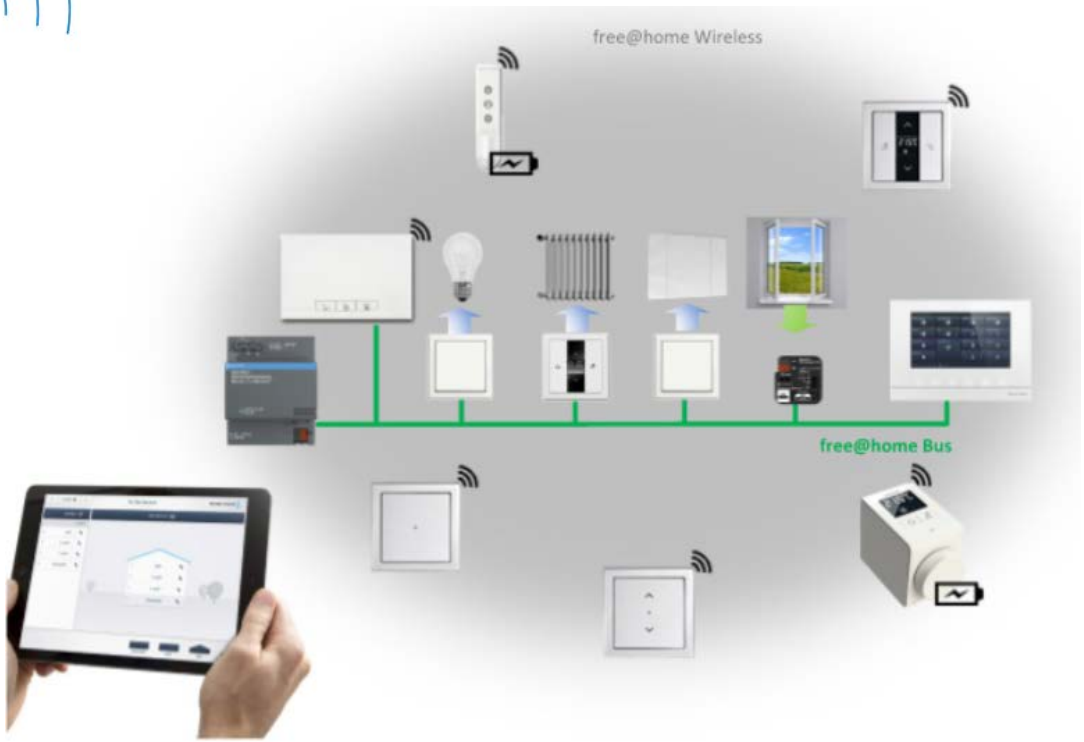
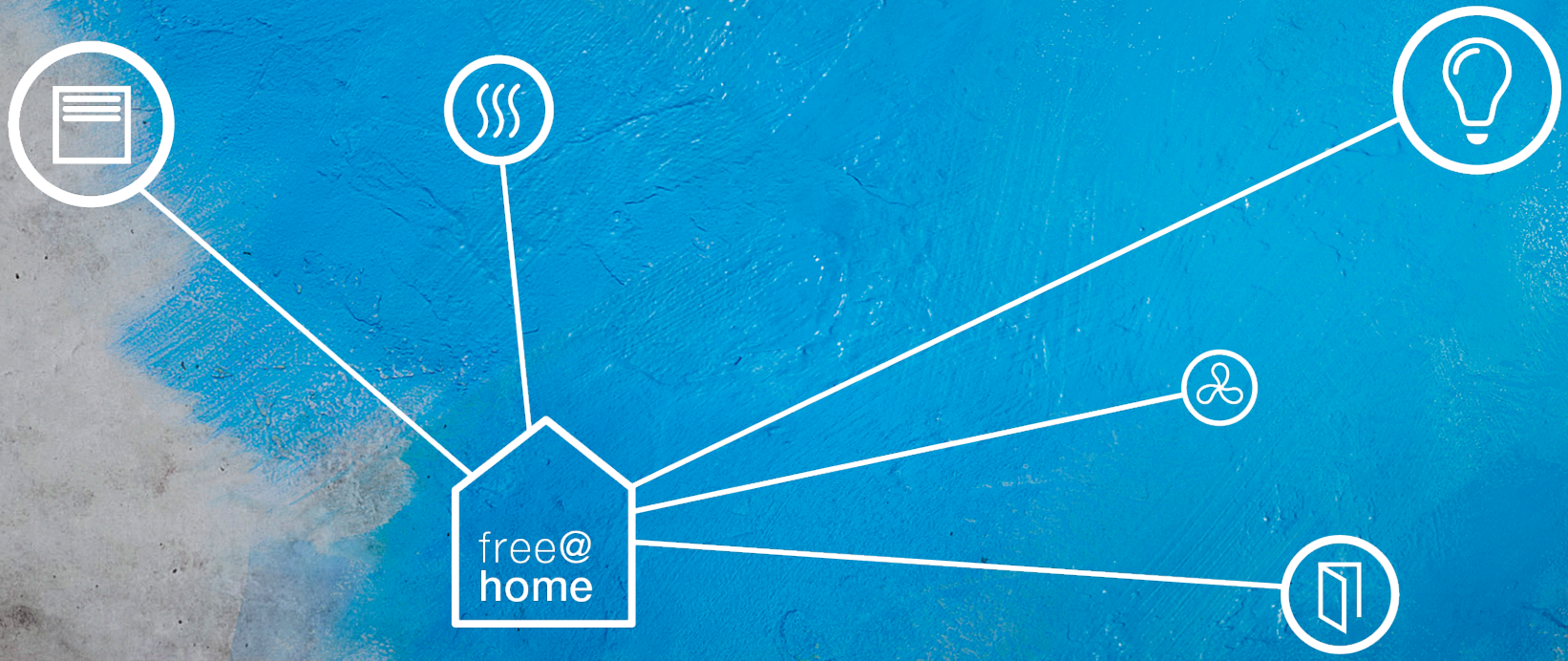


ABB-free@home Wireless.Webinar



free@home Wireless Webinar

Presenter

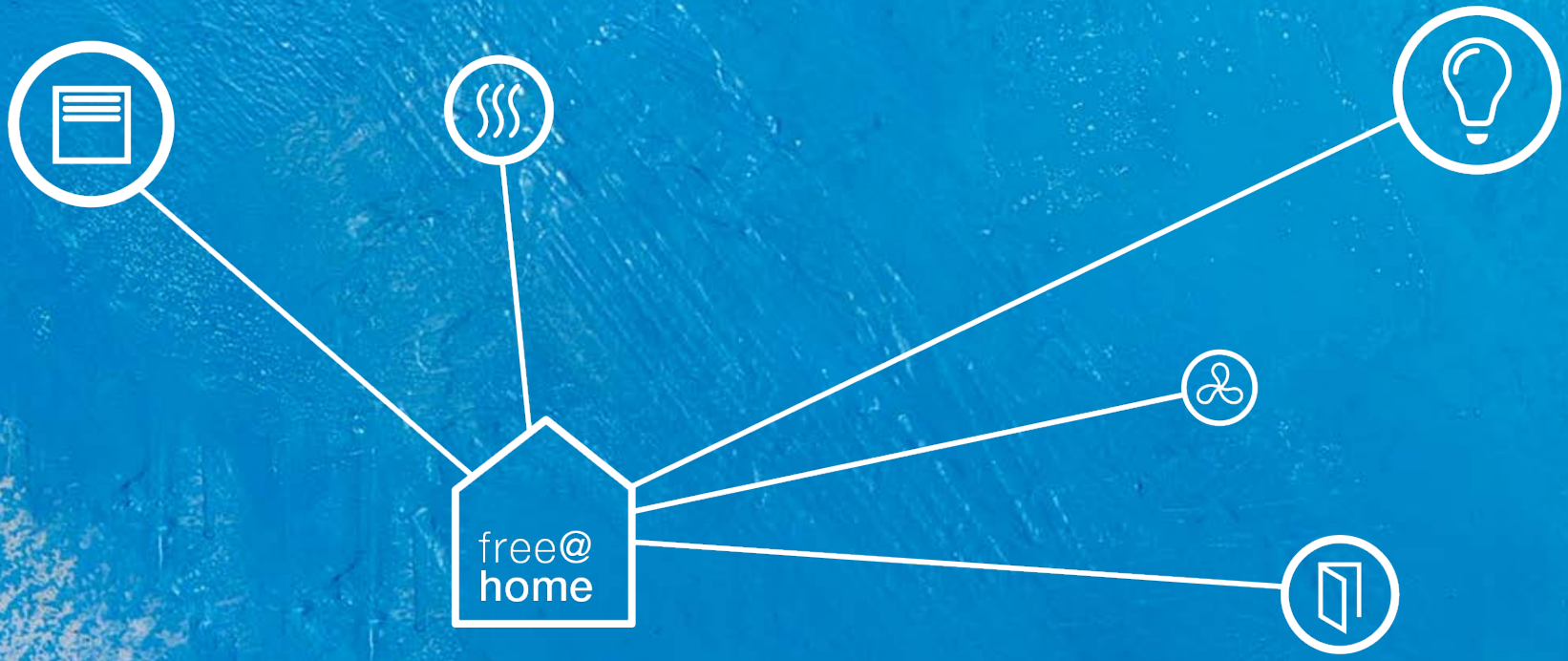
- **Christian Kruppa**
- Product Manager **ABB**-free@**home**®

free@home Wireless Webinar

Agenda

- Introduction
- Technical Specification & Guidelines
- Portfolio
- Commissioning

Introduction

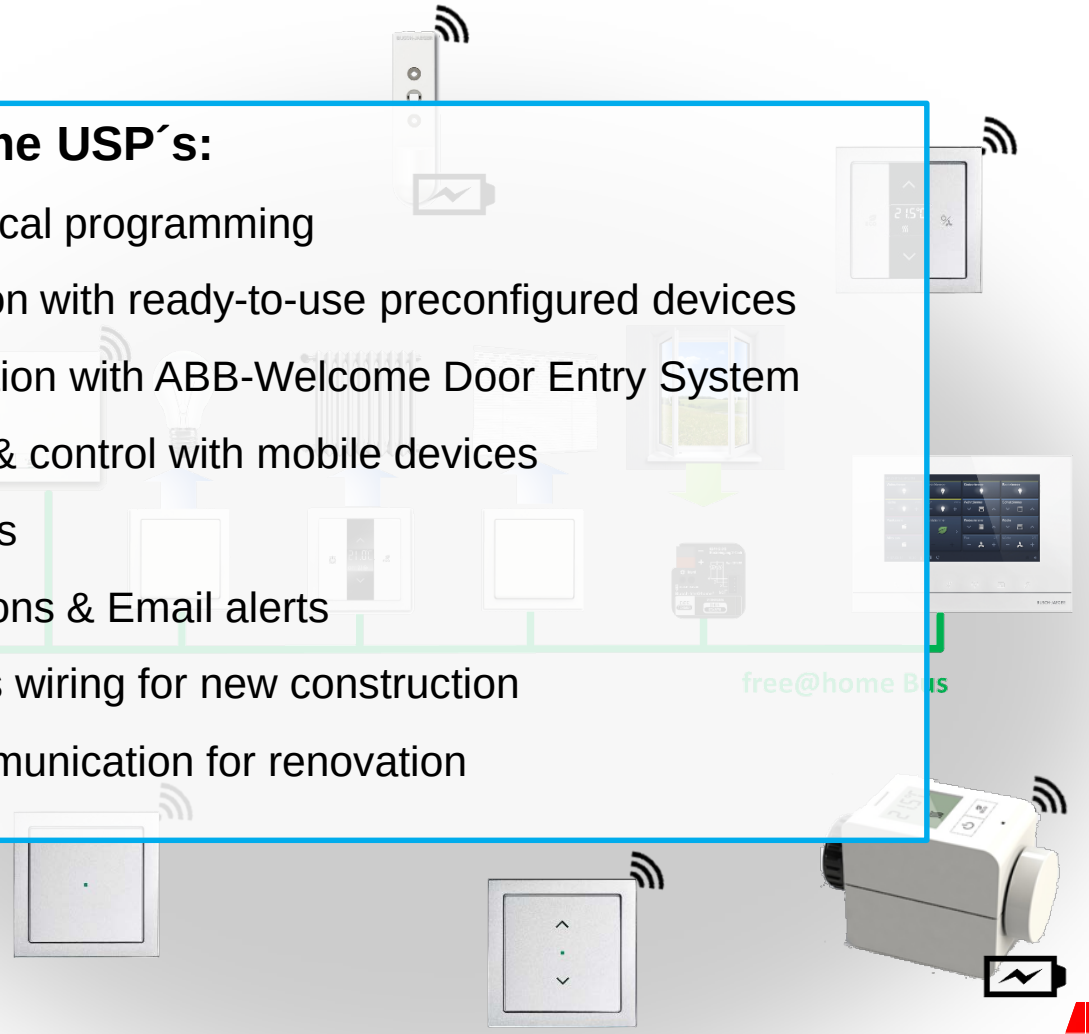


free@home Wireless

Introduction

ABB-free@home USP´s:

- Intuitive graphical programming
- Easy installation with ready-to-use preconfigured devices
- Strong integration with ABB-Welcome Door Entry System
- Programming & control with mobile devices
- Remote Access
- Push notifications & Email alerts
- Structured Bus wiring for new construction
- Wireless communication for renovation



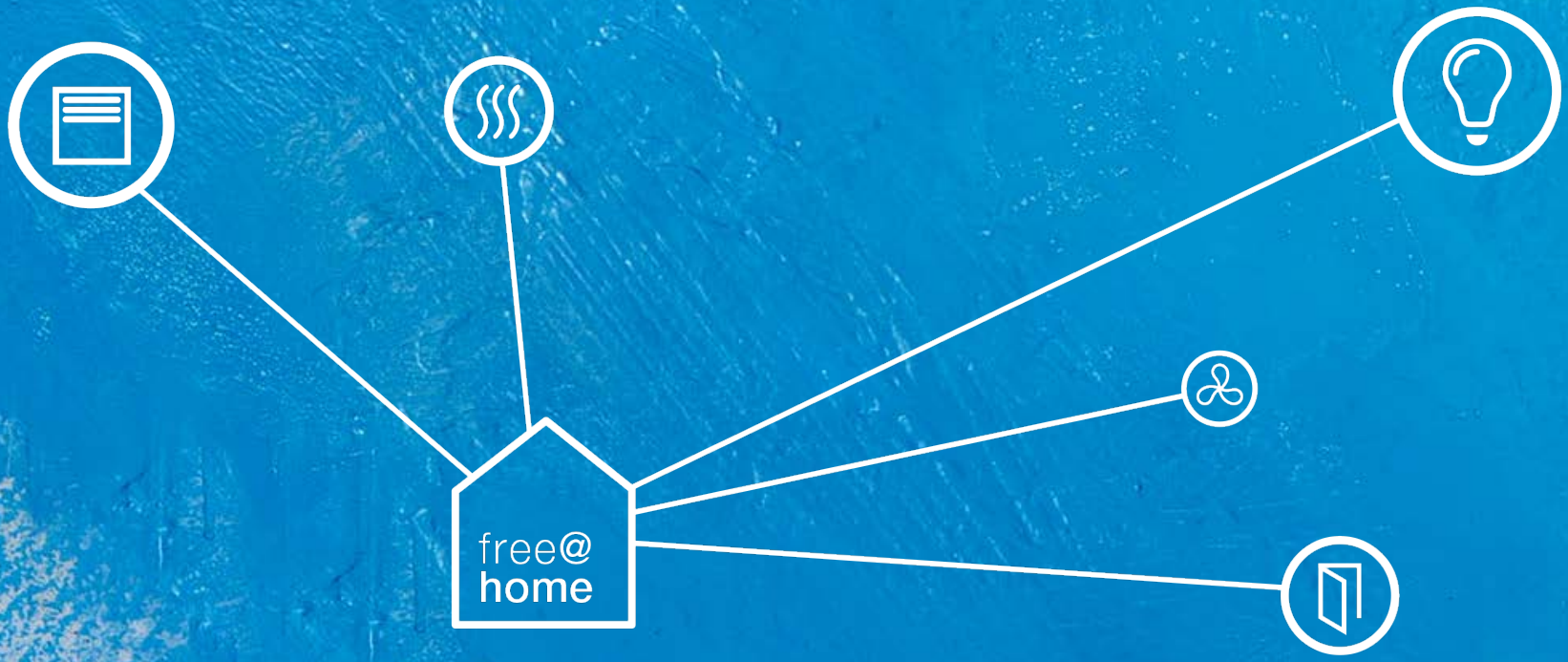
free@home Wireless
Introduction

- Applications: Replacement of existing conventional switches, dimmers and thermostats

free@home Wireless
Introduction

- All free@home wireless devices support the same feature set as the existing free@home wired devices
- Existing conventional switches can be easily replaced by combined sensor/ actuator devices
- Devises can be used out-of-the-box due to pre-configured functionality
- One free@home system might include wired and wireless devices
- Aesthetic integration in to a huge range of EWA switch ranges

Technical Specification & Guidelines



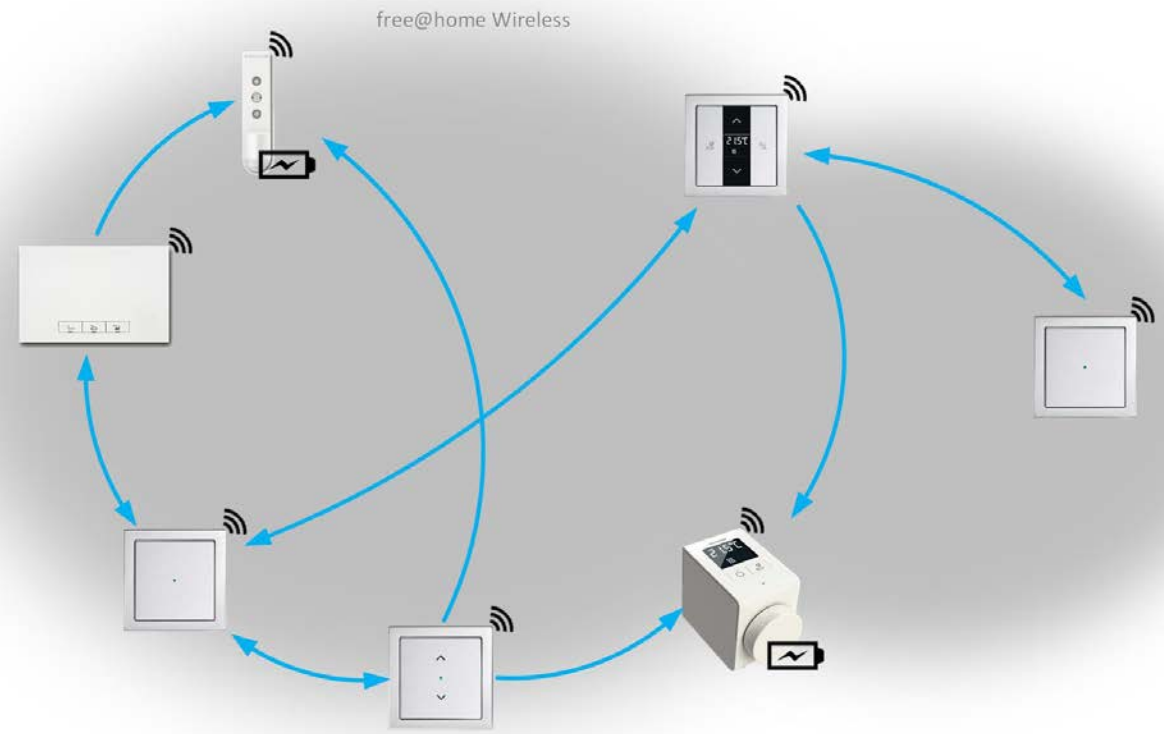
free@home Wireless

Technical Specification

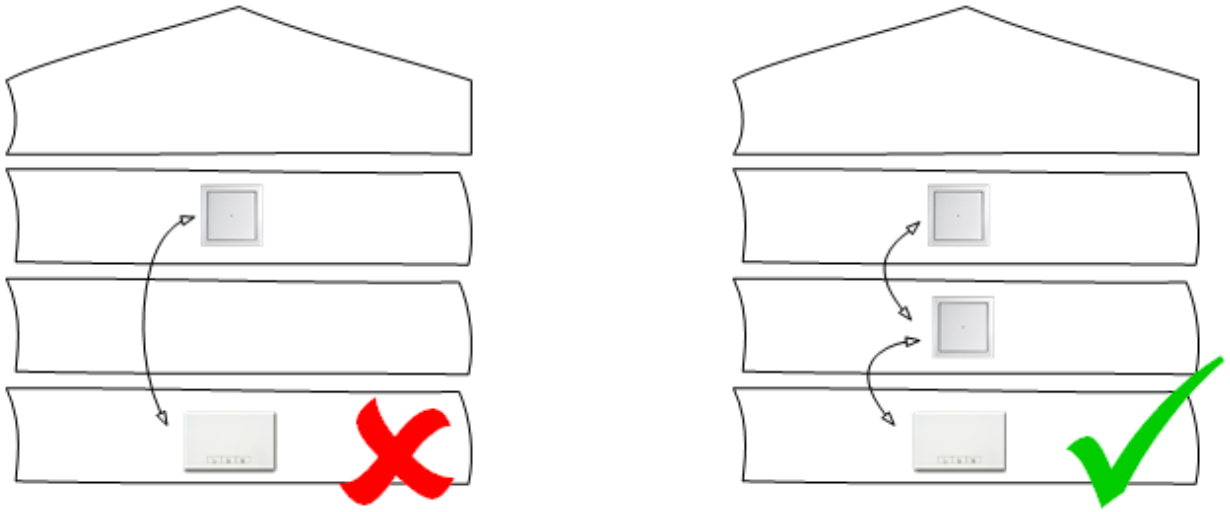
ABB-free@home Wireless	
RF Protocol	2.4GHz Proprietary Protocol – Meshed Network
Encryption	AES-128
System size	64 wired + 64 wireless devices
RF Range	Up to 100m in line of sight

free@home Wireless

Meshed Network

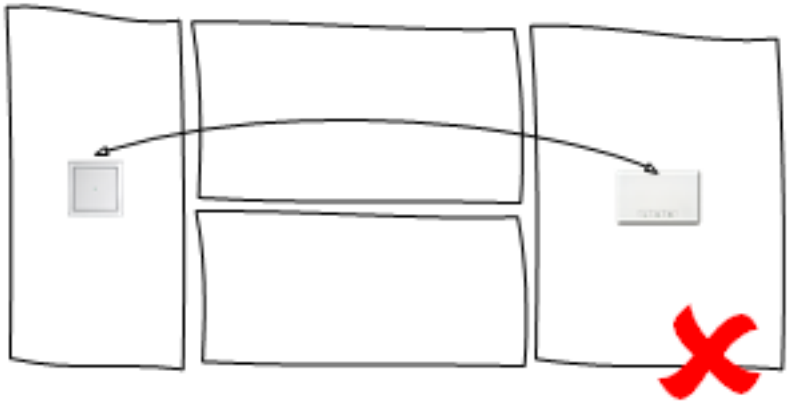


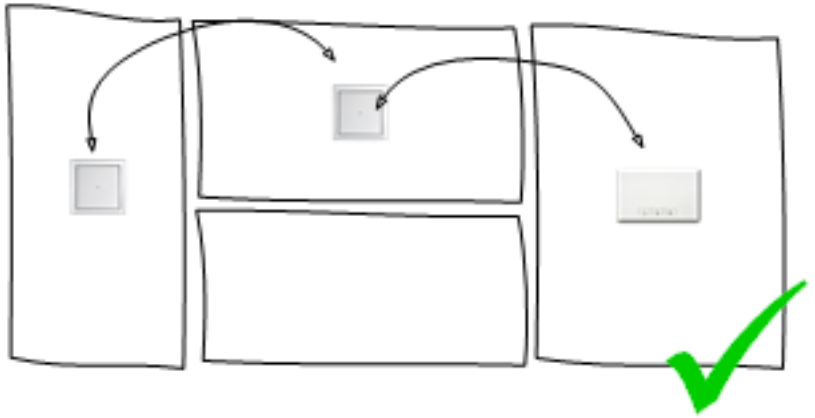
free@home Wireless
Installation Guidelines



» Two communicating devices should not be separated by more than one floor

free@home Wireless
Installation Guidelines





» Two communicating devices should not be separated by more than one room wall

free@home Wireless
Installation Guidelines

General advice

- free@home wireless devices should not be positioned in direct proximity to large metal surfaces (e.g. stainless steal refrigerators, mirrors, etc.)
- Wet (e.g. recently plastered) walls are damping the signal stronger than dry walls
- Concrete ceilings and brick walls are damping the signal stronger than wooden ceilings and drywall

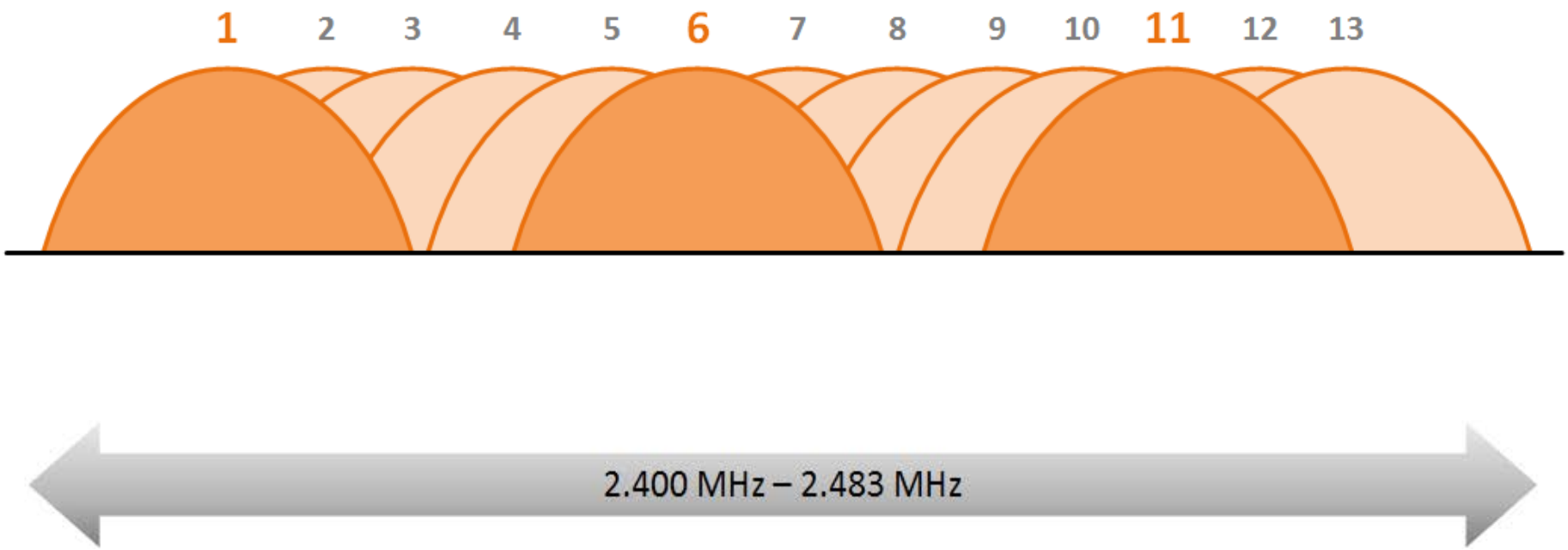
Potential sources for RF Interference

- WIFI Router (2,4GHz)
- Microwaves
- Fluorescent lamps
- Cheap or defective electronic products

free@home Wireless

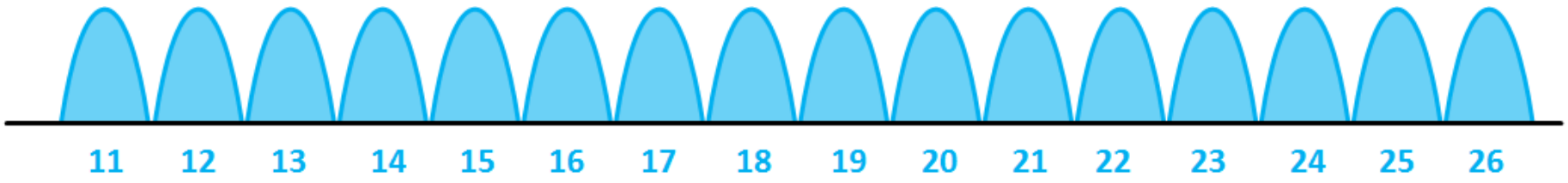
WLAN & free@home Wireless

Wifi Channels

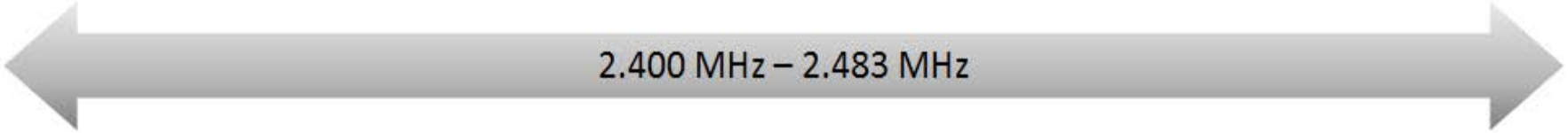


free@home Wireless

WLAN & free@home Wireless

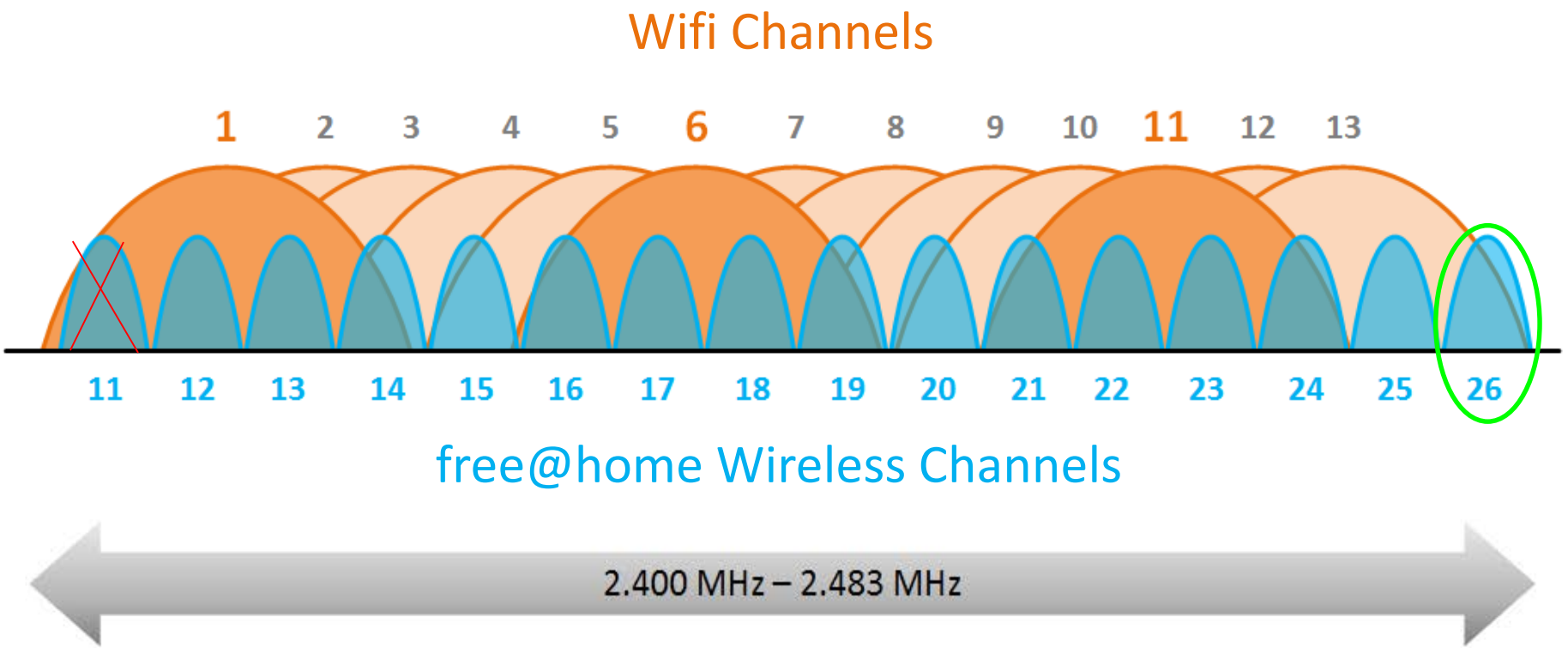


free@home Wireless Channels



free@home Wireless

WLAN & free@home Wireless

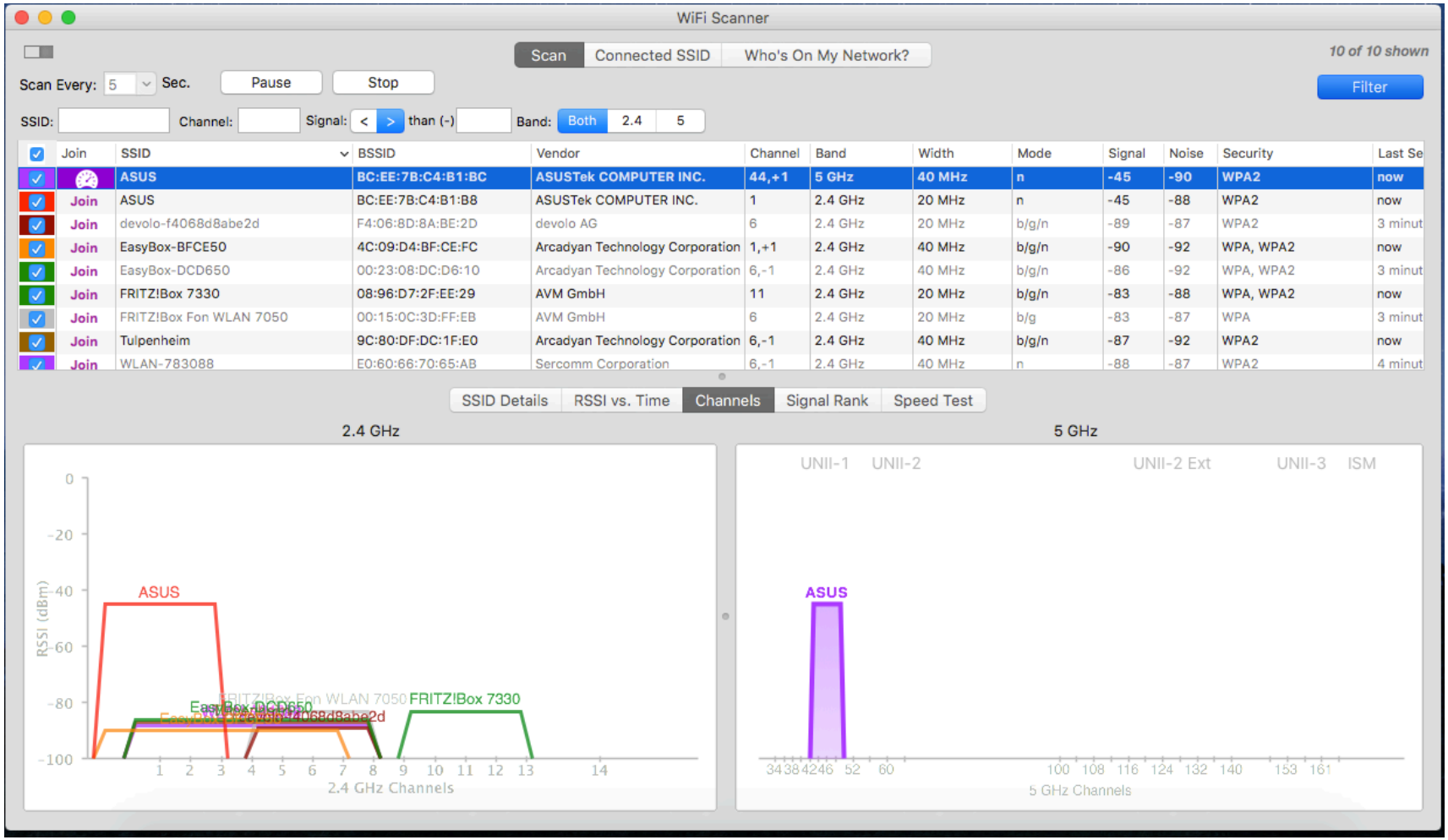


Default channel of System Access Point

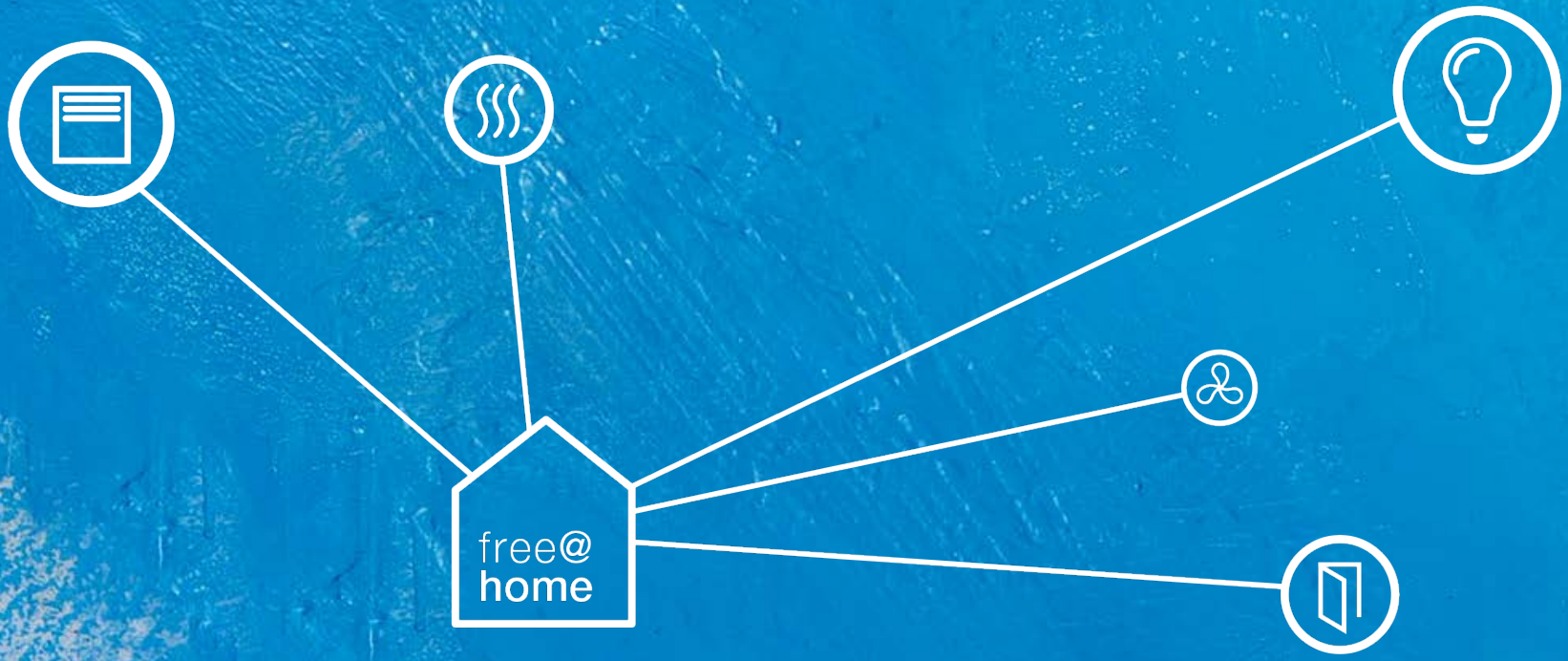
Restricted for ABB

free@home Wireless

WLAN & free@home Wireless

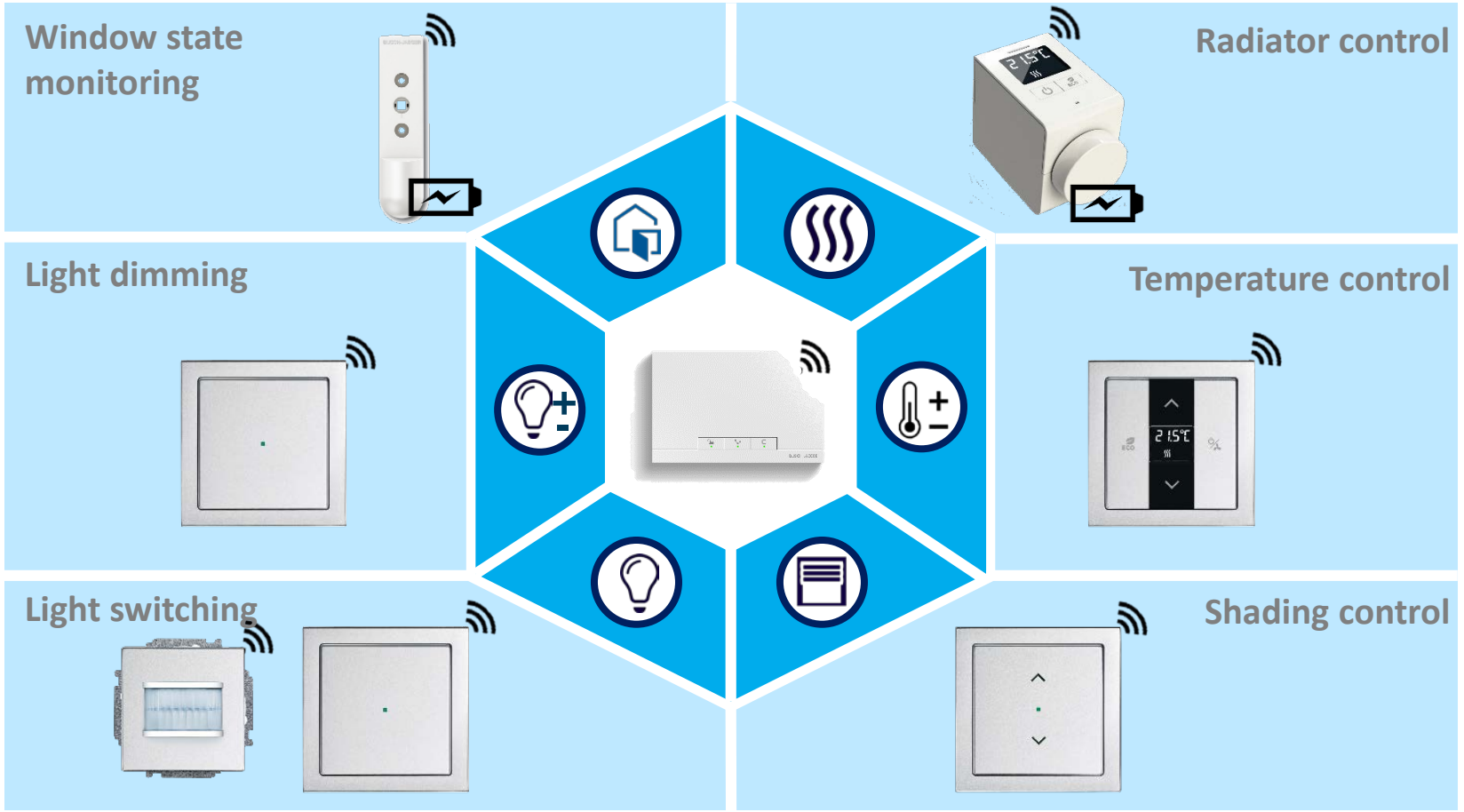


free@home Wireless Portfolio



free@home Wireless

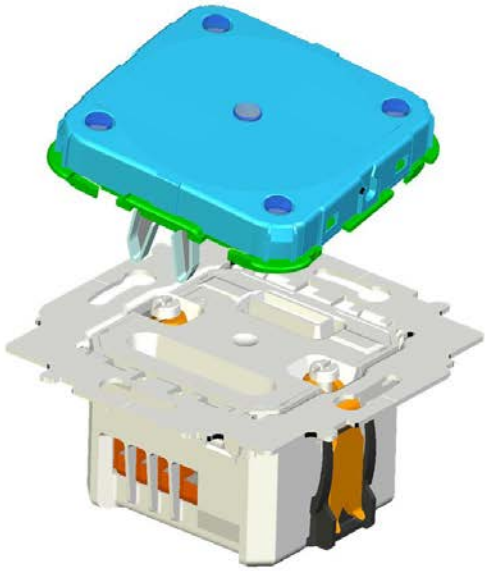
Portfolio



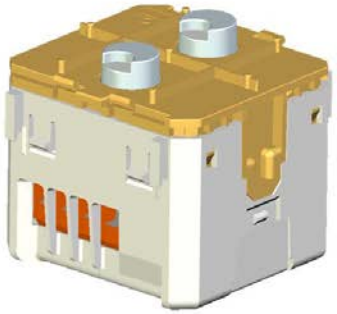
free@home Wireless

Flush Mounted Inserts

Range60



Range44

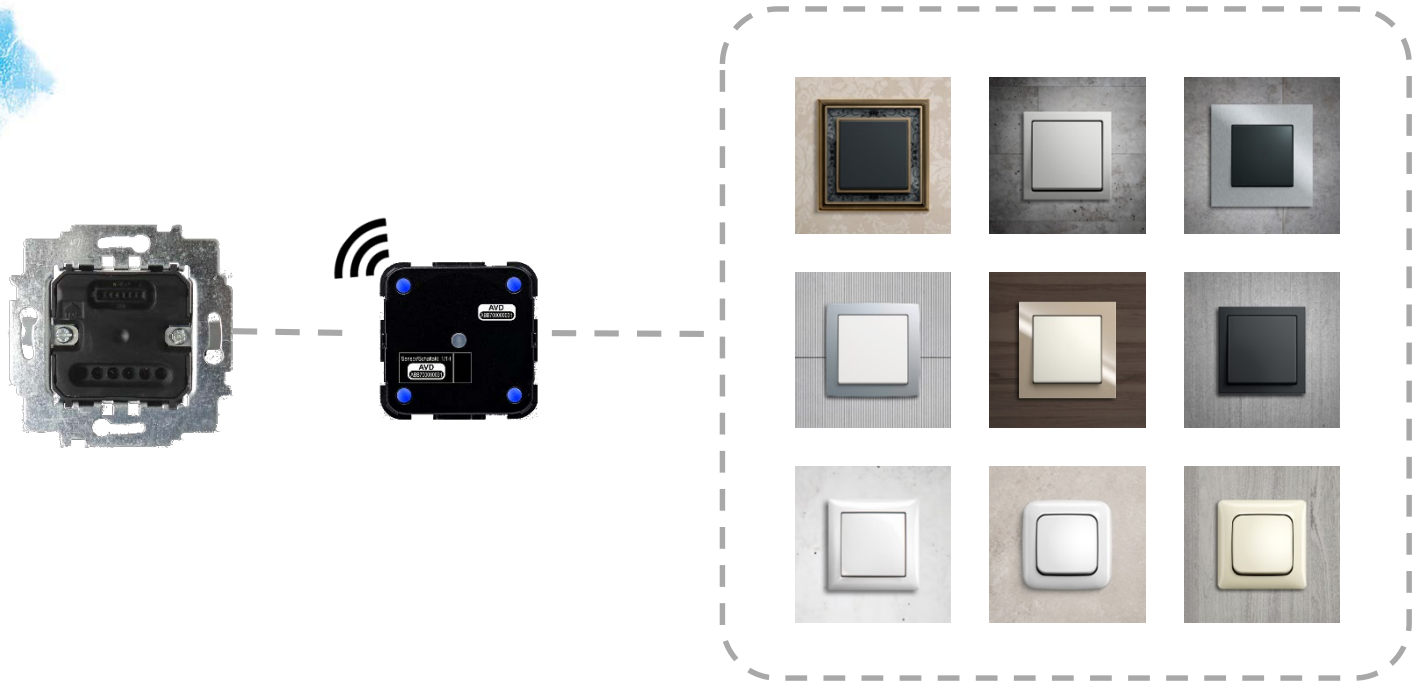


free@home Wireless

Design Range Integration

free@home Wireless
Design Range Integration

» free@home wireless devices are compatible to all existing free@home cover plates*



*exception: Range44 free@home wireless Movement detector covers

free@home Wireless

Portfolio

Article No.		Product	
SAP-S-2		System Access Point	
SAP-1-WL		External Antenna	
WBI-S-1-64-WL		Window sensor, Wireless	
WBI-S-1-65-WL		Window sensor, Wireless	
WBI-S-1-66-WL		Window sensor, Wireless	
BI-S-1-64-WL		Universal Sensor, Wireless	
BI-S-1-65-WL		Universal Sensor, Wireless	
HA-S-1-WL		Radiator Thermostat Basic, Wireless	
HA-S-2-WL		Radiator Thermostat Comfort, Wireless	
AC-HA-1		Herz Adapter	
AC-HA-2		Orkli Adapter	
AC-HA-3		Comap Adapter	
Range 60	**Range 44**		**Colour**
SU-F-1.0.1-WL	SU-F-1.0.PB.1-WL	Sensor unit 1gang, Wireless	-
SU-F-2.0.1-WL	SU-F-2.0.PB.1-WL	Sensor unit 2gang, Wireless	-
SSA-F-1.1.1-WL	SSA-F-1.1.PB.1-WL	Sensor/Switch actuator 1/1gang, Wireless	-
SSA-F-2.1.1-WL	SSA-F-2.1.PB.1-WL	Sensor/Switch actuator 2/1gang, Wireless	-
SSA-F-2.2.1-WL	SSA-F-2.2.PB.1-WL	Sensor/Switch actuator 2/2gang, Wireless	-
SDA-F-1.1.1-WL	SDA-F-1.1.PB.1-WL	Sensor/Dim actuator 1/1gang, Wireless	-
SDA-F-2.1.1-WL	SDA-F-2.1.PB.1-WL	Sensor/Dim actuator 2/1gang, Wireless	-
SBA-F-1.1.1-WL	SBA-F-1.1.PB.1-WL	Sensor/Blind actuator 1/1gang, Wireless	-
SBA-F-2.1.1-WL	SBA-F-2.1.PB.1-WL	Sensor/Blind actuator 2/1gang, Wireless	-
RTC-F-1-WL	RTC-F-1.PB-WL	Room thermostat, Wireless	-
RTC-F-2.1-1-WL	RTC-F-2.1-1.PB-WL	Room thermostat/actuator, Wireless	-
-	MSA-F-1.1.1-WL	Movement detector/actuator 1gang, Wireless	-
MSA-F-1.1.1-81-WL	-	Movement detector/actuator 1gang, Wireless	anthrazit
MSA-F-1.1.1-82-WL	-	"	elfenbeinweiß
MSA-F-1.1.1-83-WL	-	"	alusilber
MSA-F-1.1.1-84-WL	-	"	studioweiß
MSA-F-1.1.1-212-WL	-	"	weiß
MSA-F-1.1.1-214-WL	-	"	alpinweiß
MSA-F-1.1.1-803-WL	-	"	graumetallic
MSA-F-1.1.1-815-WL	-	"	gelb
MSA-F-1.1.1-866-WL	-	"	edelstahl
MSA-F-1.1.1-884-WL	-	"	studioweiß matt
MSA-F-1.1.1-885-WL	-	"	schwarz matt
MSA-F-1.1.1-896-WL	-	"	chalet-weiß
MSA-F-1.1.1-92-WL	-	"	weiß
MSA-F-1.1.1-93-WL	-	"	champagner
MSA-F-1.1.1-94-WL	-	"	alpinweiß
MSA-F-1.1.1-95-WL	-	"	chateau-schwarz
MSA-F-1.1.1-96-WL	-	"	chalet-weiß

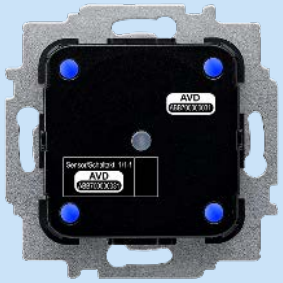
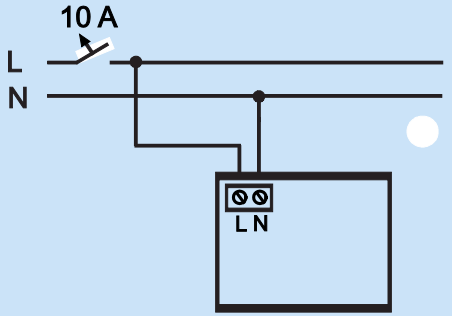
free@home Wireless

Portfolio Flush Mount Range 60

SU-F-1.0.1-WL	Sensor unit 1gang, Wireless
SU-F-2.0.1-WL	Sensor unit 2gang, Wireless
SSA-F-1.1.1-WL	Sensor/Switch act. 1/1gang, Wireless
SSA-F-2.1.1-WL	Sensor/Switch act. 2/1gang, Wireless
SSA-F-2.2.1-WL	Sensor/Switch act. 2/2gang, Wireless
MSA-F-1.1.1-x-WL	Movement detector/act. 1gang, Wireless
SDA-F-1.1.1-WL	Sensor/Dim act. 1/1gang, Wireless
SDA-F-2.1.1-WL	Sensor/Dim act. 2/1gang, Wireless
SBA-F-1.1.1-WL	Sensor/Blind act. 1/1gang, Wireless
SBA-F-2.1.1-WL	Sensor/Blind act. 2/1gang, Wireless
RTC-F-1-WL	Room thermostat, Wireless
RTC-F-2.1.1-WL	Room thermostat/actuator, Wireless

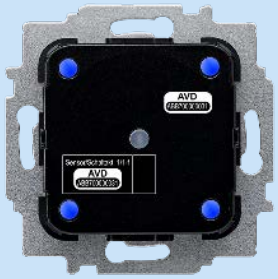
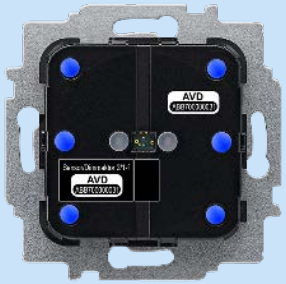
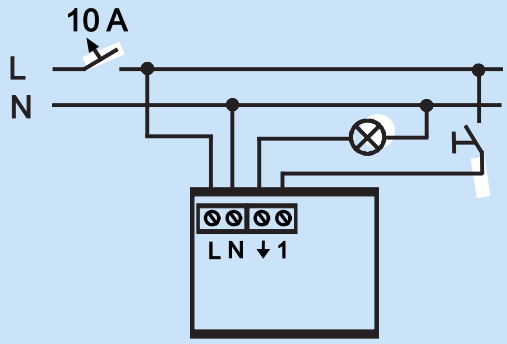
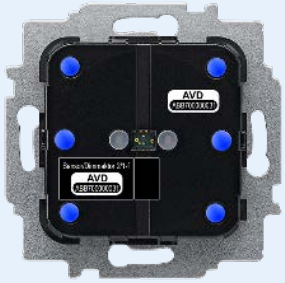
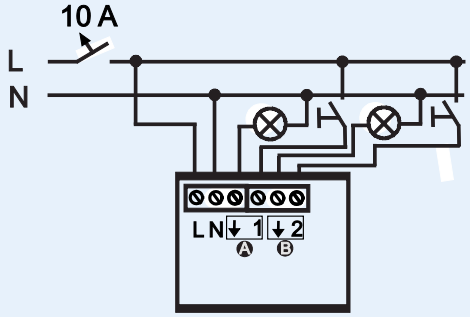
free@home Wireless

Portfolio

Sensor unit	1-gang	2-gang	
	 SU-F-1.0.1-WL 127V / 230V 50/60Hz	SU-F-2.0.1-WL 127V / 230V 50/60Hz	

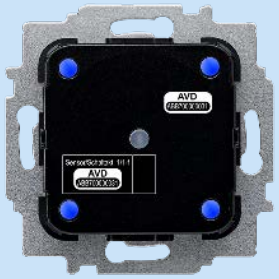
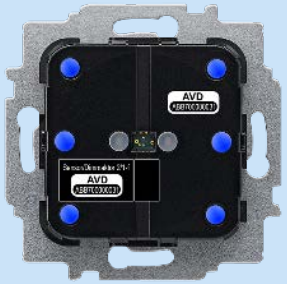
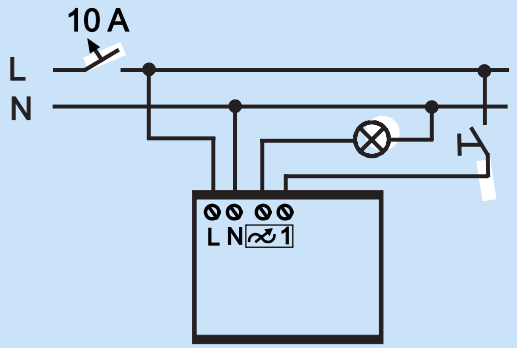
free@home Wireless

Portfolio

Sensor/Switch actuator	1-gang sensor	2-gang sensor	
1-gang actuator	 SSA-F-1.1.1-WL 127V / 230V 50/60Hz 1 x 2300W @ 230V	 SSA-F-2.1.1-WL 127V / 230V 50/60Hz 1 x 2300W @ 230V	
2-gang actuator	---	 SSA-F-2.2.1-WL 127V / 230V 50/60Hz 2 x 1200W @ 230V	

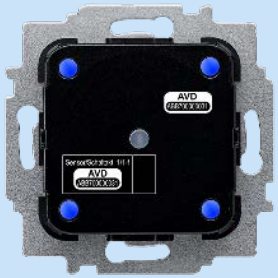
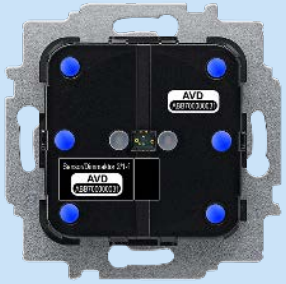
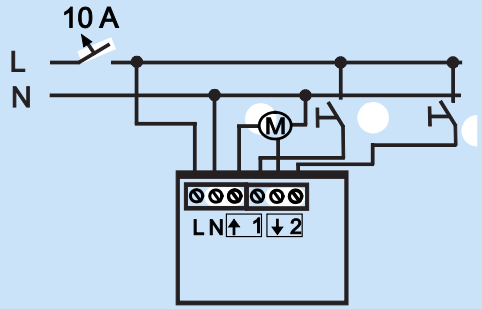
free@home Wireless

Portfolio

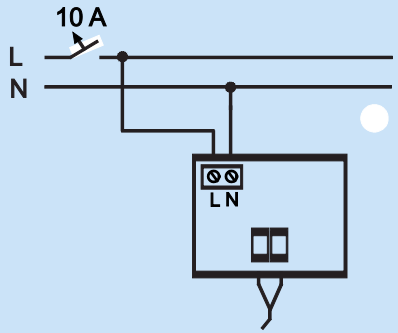
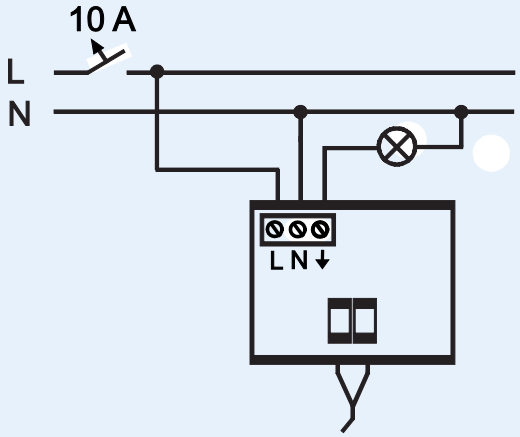
Sensor/Dim actuator	1-gang sensor	2-gang sensor	
1-gang actuator	 SDA-F-1.1.1-WL 230V 50/60Hz 1 x 180 W/VA	 SDA-F-2.1.1-WL 230V 50/60Hz 1 x 180 W/VA	

free@home Wireless

Portfolio

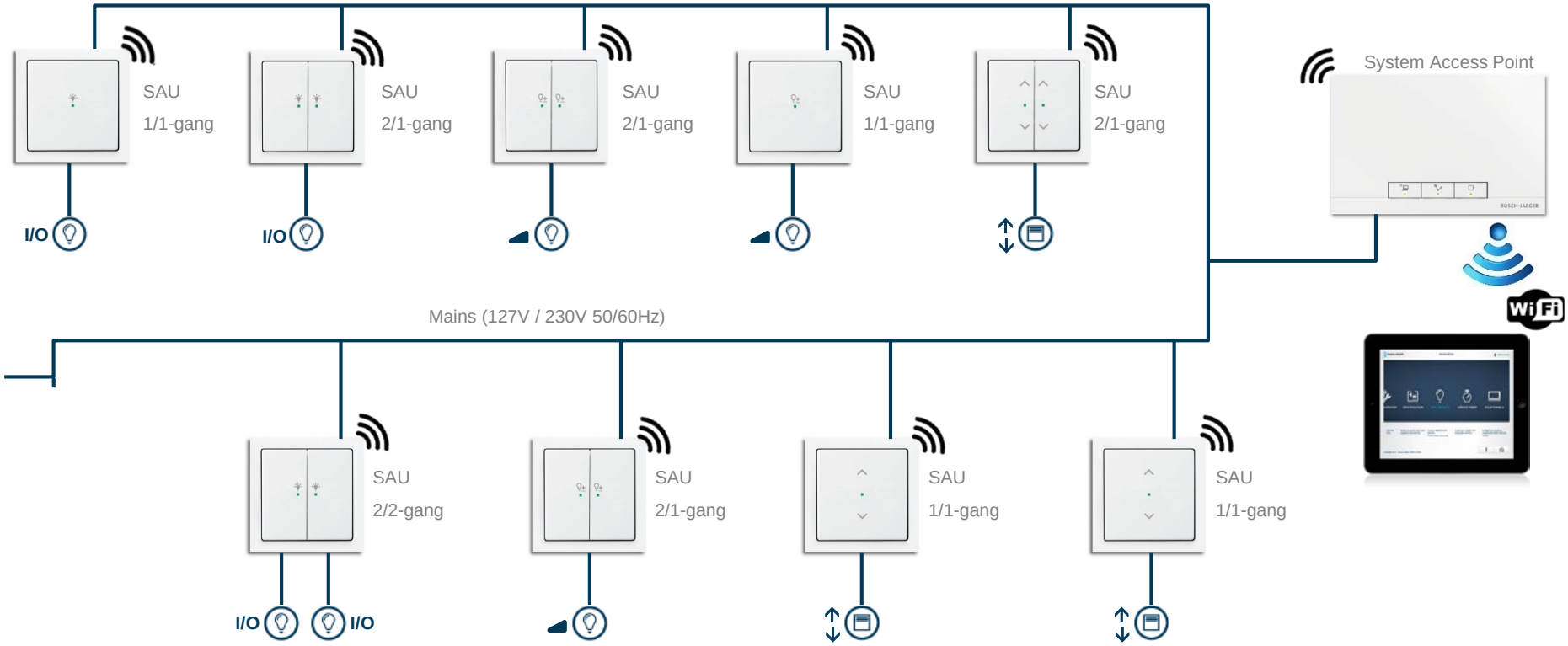
Sensor/Blind actuator	1-gang sensor	2-gang sensor	
1-fach actuator	 SBA-F-1.1.1-WL 127V / 230V 50/60Hz 4A cos ϕ=0,5	 SBA-F-2.1.1-WL 127V / 230V 50/60Hz 4A cos ϕ=0,5	

free@home Wireless
Portfolio

Roomthermostat		
Roomthermostat	 RTC-F-1-WL 127V / 230V 50/60Hz	
Roomthermostat/ actuator	 RTC-F-2.1-1-WL 127V / 230V 50/60Hz 16A	

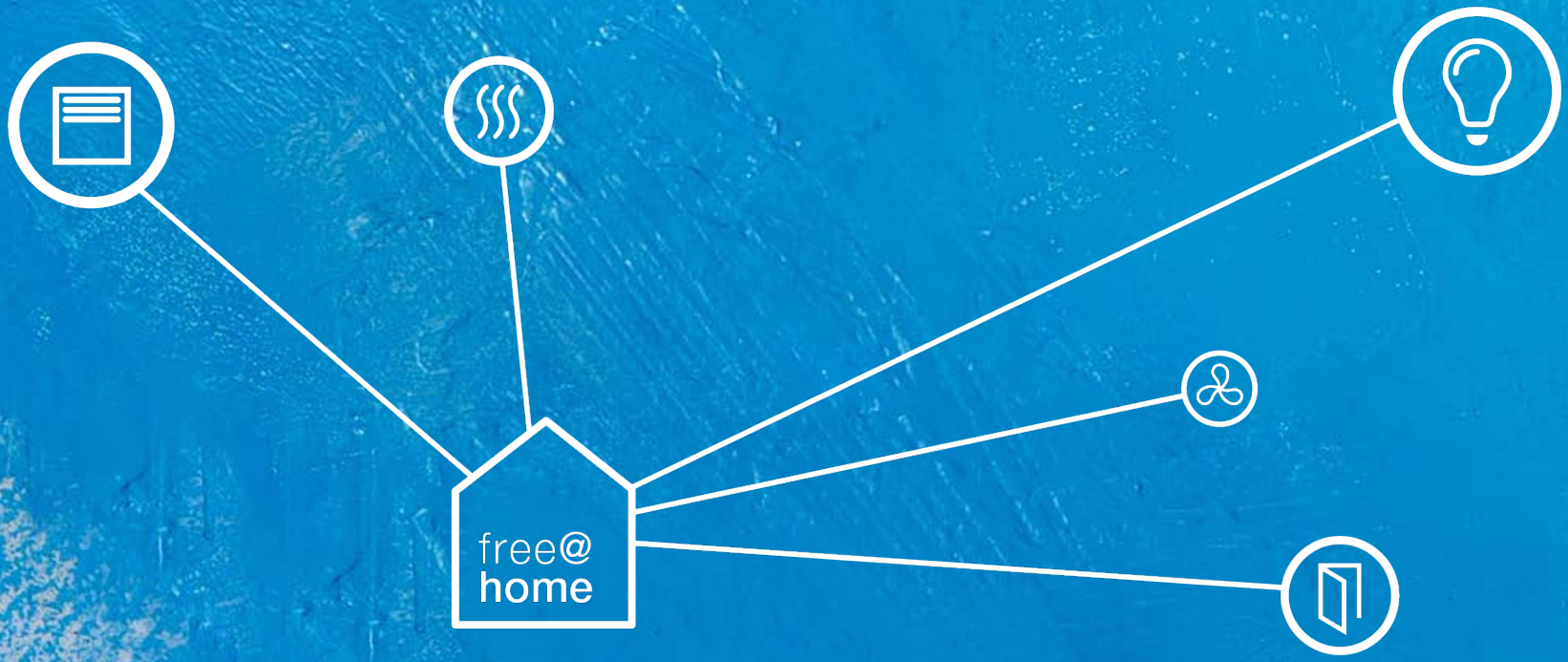
free@home Wireless

System topology



*SAU: sensor/actuator unit

Commissioning



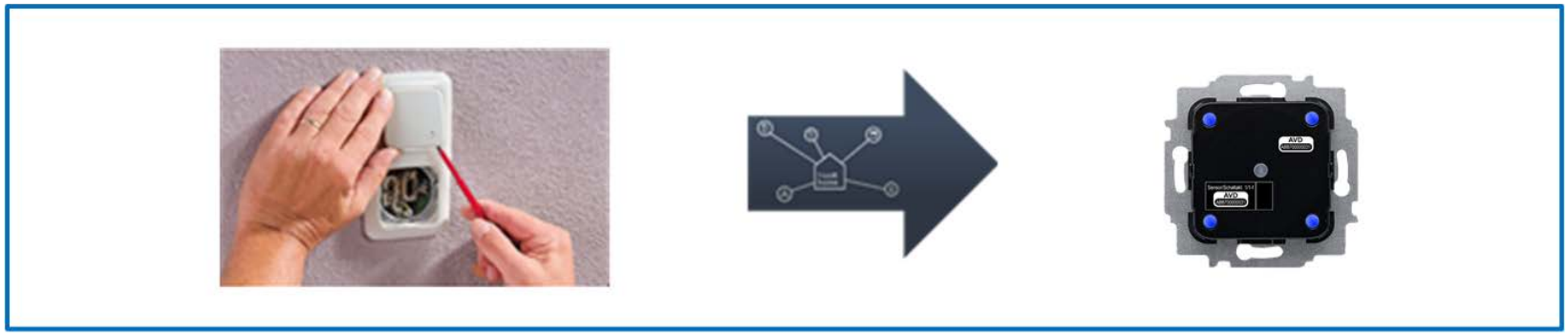
free@home Wireless

Commissioning

free@home Wireless

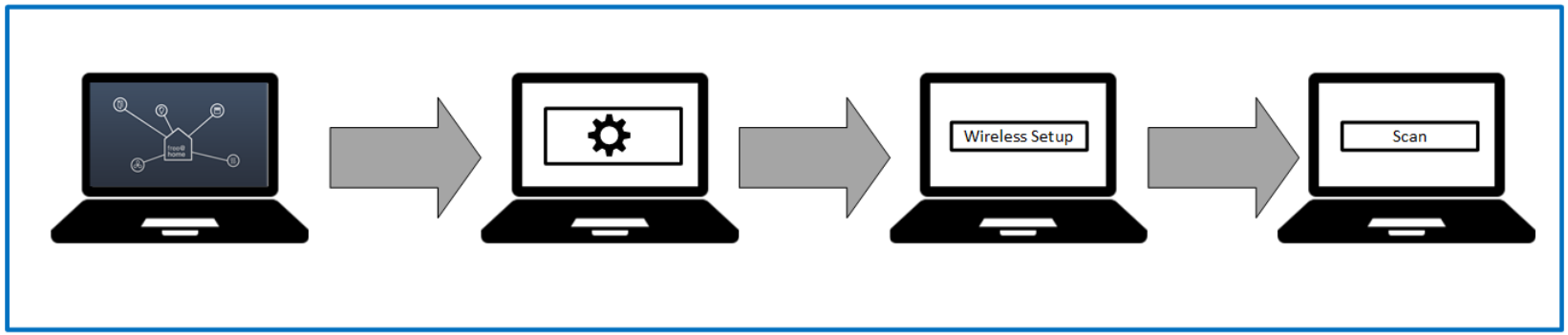
Commissioning

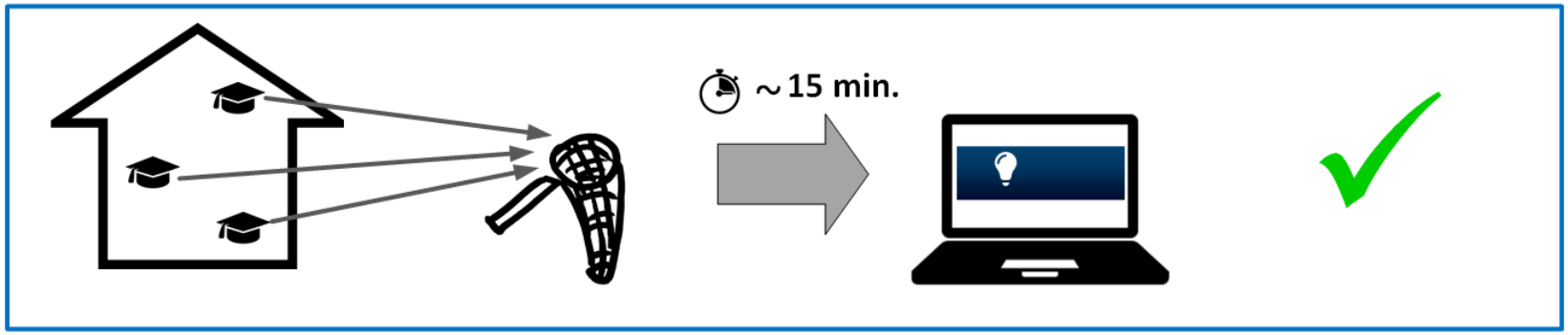
Teach-in Procedure Part I



free@home Wireless
Commissioning

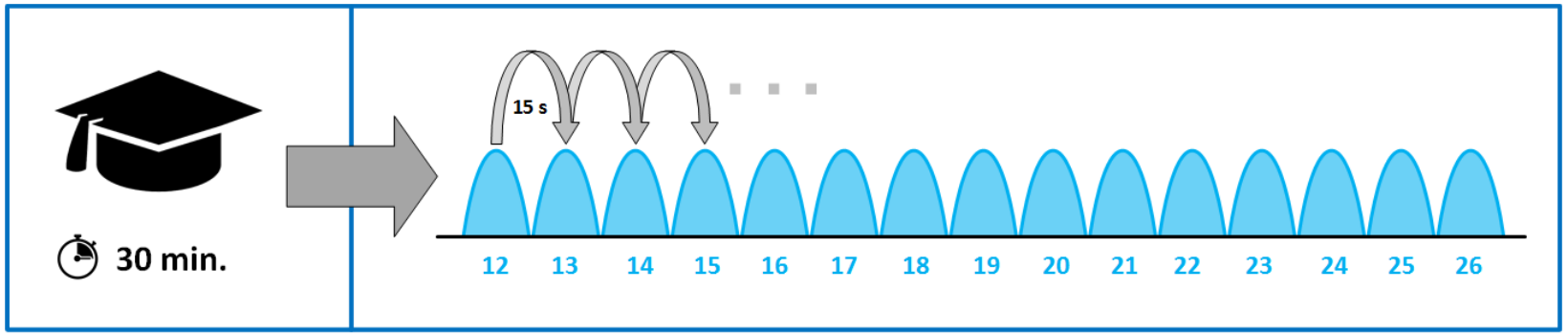
Teach-in Procedure Part II





free@home Wireless
Commissioning Basics

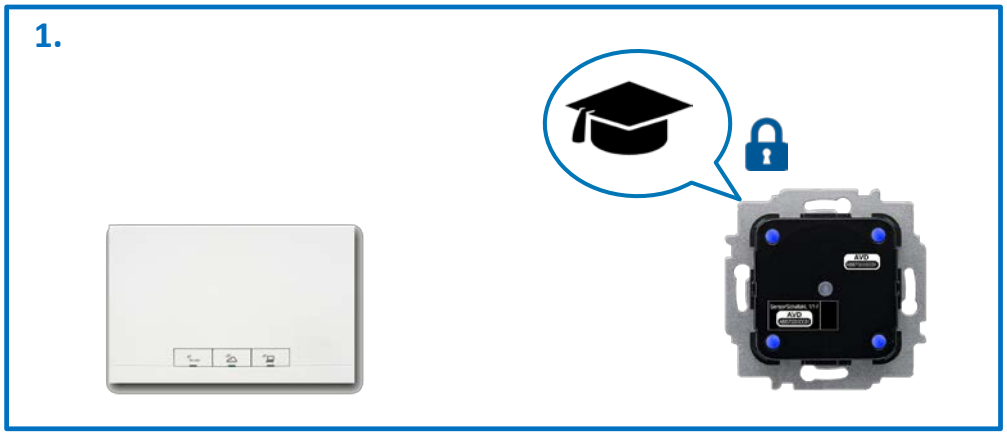
Teach-in mode



Devices in factory default mode will be in teach-in mode for 30min. after power on.

free@home Wireless
Commissioning Basics

Encryption



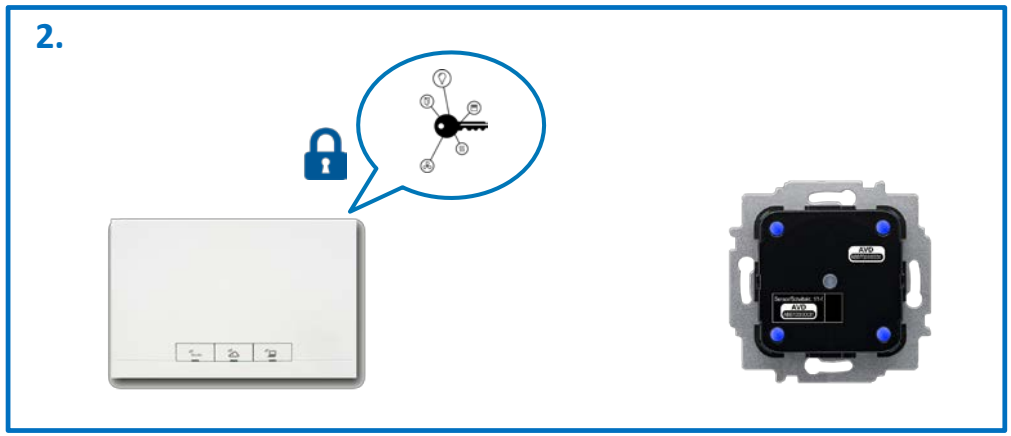
The initiate communication between devices is encrypted with the Master key

Master Key

Secret Key that is programmed during manufacturing of the device and is known among all free@home devices.

free@home Wireless
Commissioning Basics

Encryption



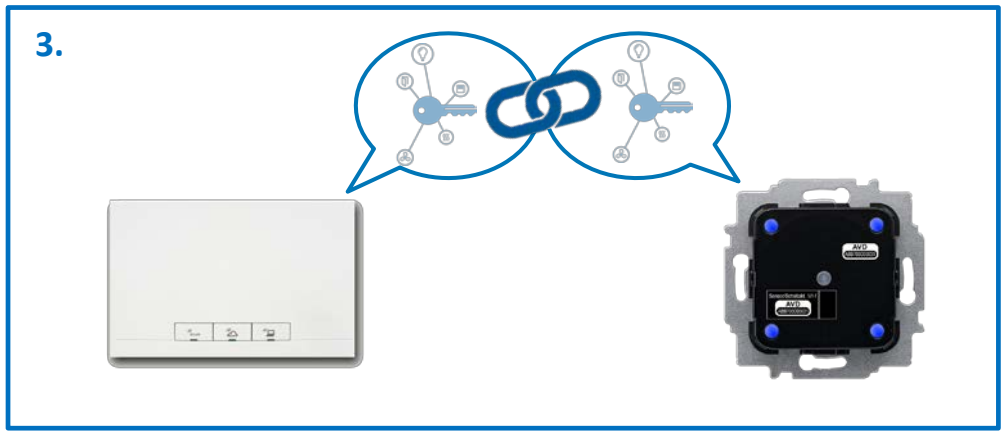
The System Access Point answers with a unique free@home Key

free@home Key

Unique Key for every free@home installation that is generated randomly during first setup by the System Access Point.

free@home Wireless
Commissioning Basics

Encryption



Once the free@home Key is exchanged the Teach-in mode is left.

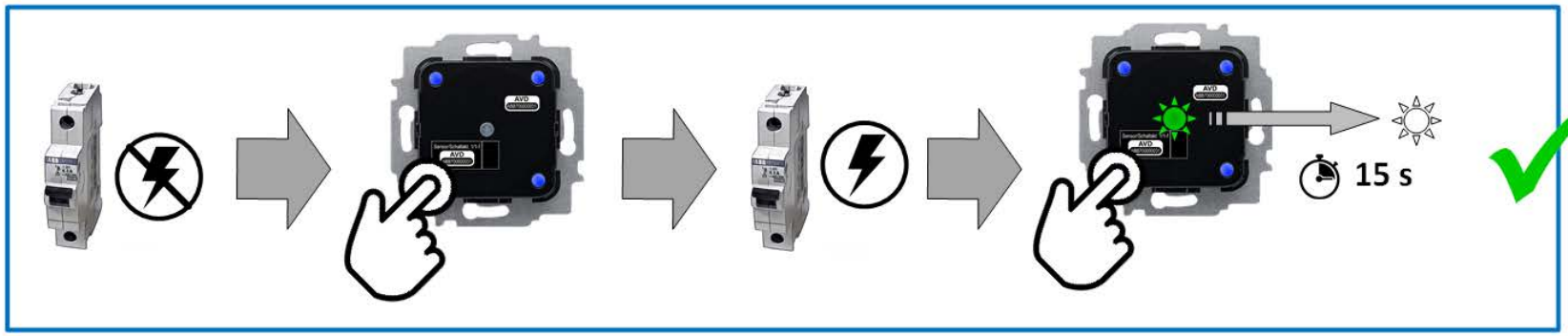
The Teach-in mode can only be started again after reset to factory default.

The free@home Key is a must-have information in order to restore a System from a backup.

free@home Wireless

Commissioning Basics

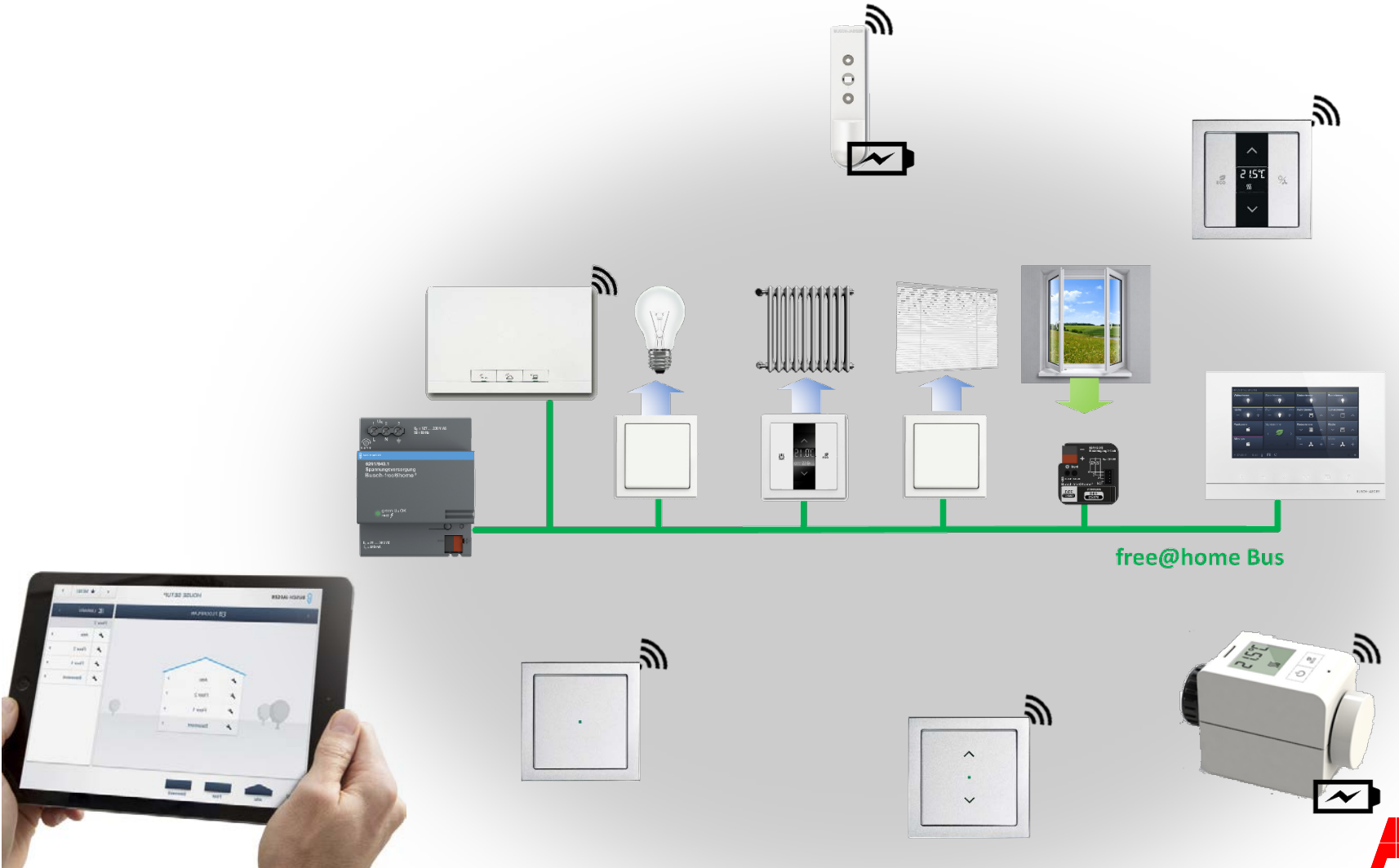
Reset to factory defaults



Once a device was added to a free@home system, it can´t be added to another system. It has to be reset to factory defaults before.

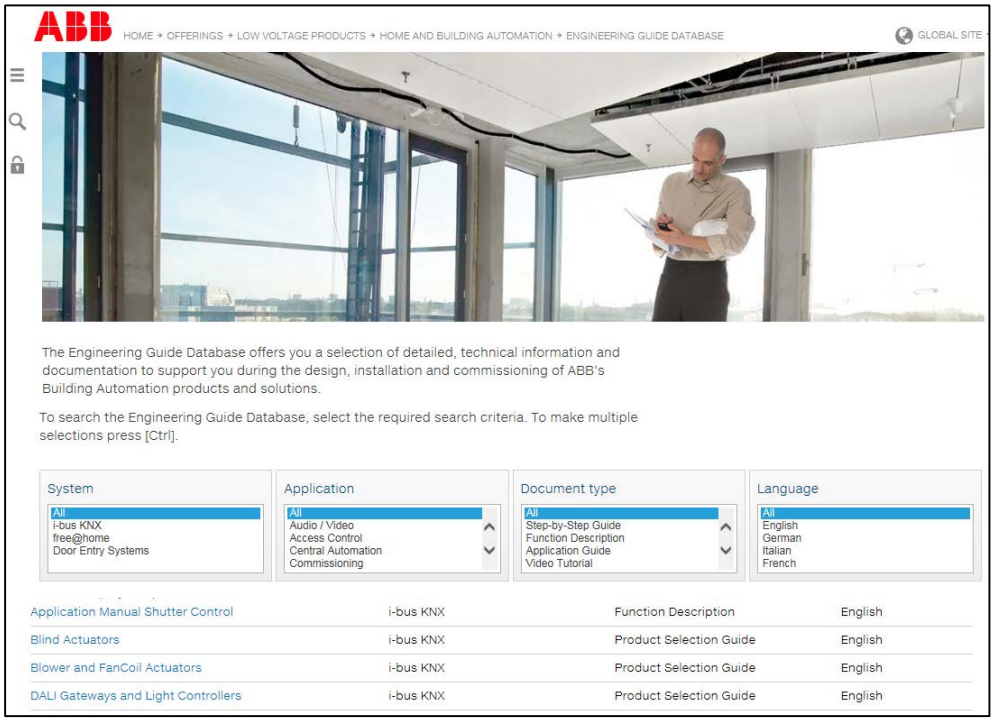
free@home Wireless

Overview



Webinar “ABB-free@home wireless”

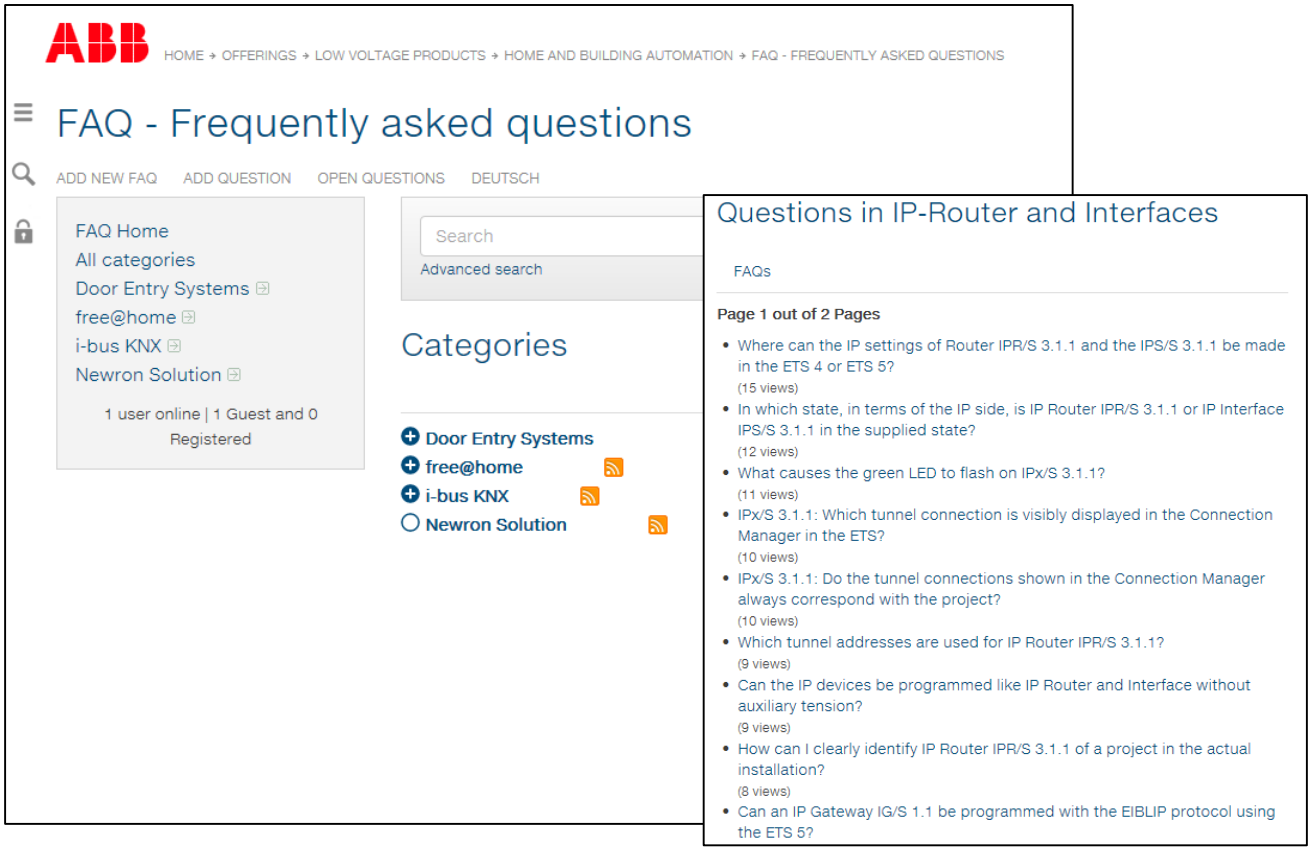
Support: Engineering Guide Database



The Engineering Guide Database offers a selection of detailed, technical information and documentation to support during the design, installation and commissioning of ABB’s Building Automation products and solutions

Webinar “ABB-free@home wireless”

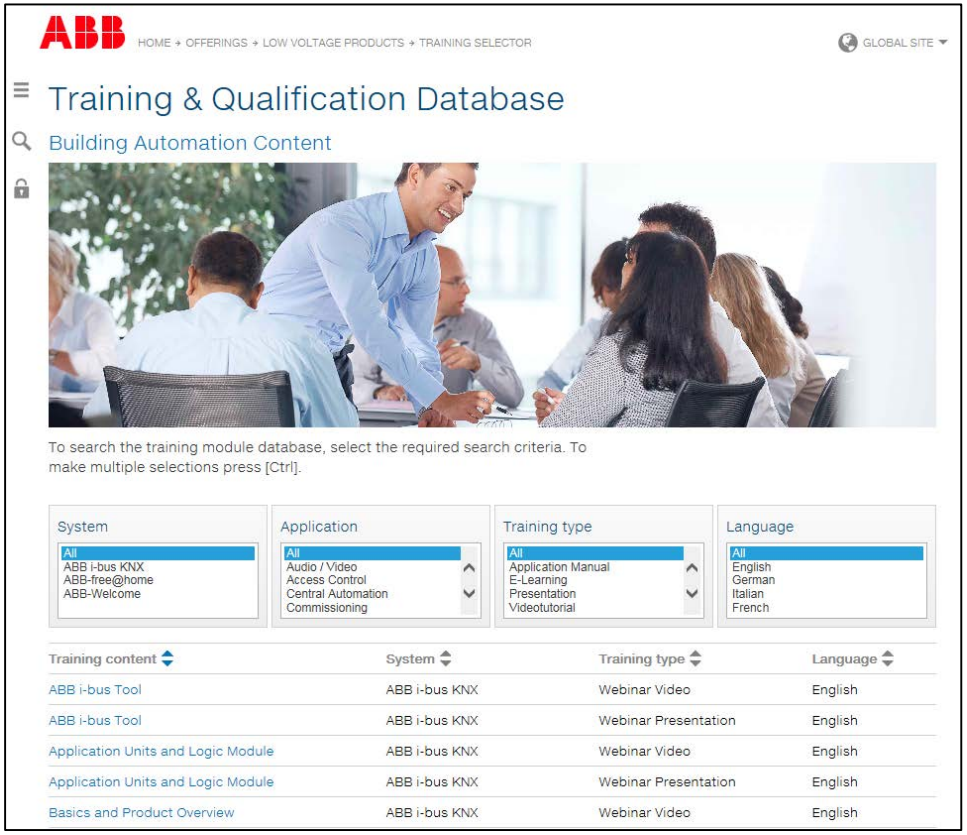
FAQ - Frequently asked questions



With this service we offer an additional support function for our building automation product range

Webinar “ABB-free@home wireless”

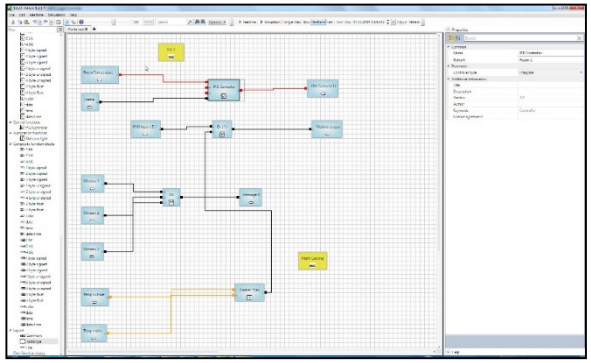
Training&Qualification Database: Training Selector



Training Database with complete Online-Training Portfolio for ABB Building Automation

Webinar “ABB-free@home wireless”

Next Webinar



- **Wednesday 25th of January 2017**
  - Morning 09:00 am Europe Time (Berlin, UTC + 1h)
  - Afternoon 03:00 pm Europe Time (Berlin, UTC + 1h)
- **Logic Controller ABA/S 1.2.1 – Part 2***
  - Practical demonstration of
    - Graphical programming interface
    - Function elements and blocks
    - Monitoring and simulation
    - Commissioning
    - WebUI
    - …

* Topic is subjected to change

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 [2016] ABB. All rights reserved.**

Power and productivity
for a better world™