

Module: Intelligent house 4.0

Submodule: Installation and configuration of smart light control

Information for teachers and trainers

Time Framing:

Time framing depends on the experience of the learning group and on the way of the formulation of the tasks.

Here a suggestion for the first task (smart plug for the floor lamp and the two-way circuit) for the learning group Electronics technician – specialising in energy and building technology:

Planning the required workflow in groups	1h
Presenting and discussing the results	1h
Installation and configuration of the smart plug, Installation and configuration of the two-way circuit	2h
Documentation	2h
Evaluation	0,5h

Before you start:

What the students need to know:

- Basics of an electric circuit
- Basics of installing and using an app
- Basics of using FAQs and the online information of the manufacturers
- Basics of network communication (e.g. communication between smart home controller, smart home devices, mobile devices and the cloud of e.g. Bosch or Phillips, this is necessary for troubleshooting)

Only for the task “two-way-circuit”:

- Function and wiring of a two-way circuit
- Danger of 230V power supply
- First aid in case of an electrical accident
- The security roles when you will work with 230V power supply

What the students need to use:

- The Smart Wall, module 1 and module 2
- Internet access via LAN (for the Bosch Controller and the HUE-Bridge)
- WLAN (if you want to communicate with a mobile device like a tablet. It must be the same net like the LAN, that means the same local IP)
- A mobile device (tablet or smartphone with IOs or Android)
- An App to configure and use the used smart home components (e.g. the Bosch Smart Home App)
- An App to configure and use the coloured lights (e.g. an App for Phillips Hue)
- Power supply 230V
- A Notebook and a camera or smartphone for documentation

Notice:

1. Internet connection and network

- 1.1. You will need *Internet connection for initialization the Bosch controller, the other Bosch smart home components and the Phillips Hue system.*

For using the smart home installation with Bosch components internet access is not necessary. All necessary information is stored in the Bosch controller. The mobile devices can communicate with the controller by WLAN.

If you use other hardware, maybe you need a permanent internet connection.

The different ways of communication between the smart home devices, the controller, the mobile devices and the Internet (e.g. Bosch Cloud) will be displayed in the following document:

1_SmartHome_Sorger_Description-Communication-Teacher-ENG.pdf

1_SmartHome_Sorger_Description-Communication-students-ENG.pdf

You will find this documents on the project-website.

- 1.2. Practical experience with the Bosch Controller shows the following effect:

If you use the controller in a small home net with a dsl-Router connected to the internet the system works perfect.

If you use the controller in a bigger LAN with multiple switches, router and firewall it you may be in contact with the Internet, but not the Bosch-Server. One reason seems to be a *blocked internet port*, in e.g. a firewall.

In the technical information from Bosch, there is no information about the port they used.

But you will find a bachelor documentation: “Security analysis of an app-driven Smart Home Systems”. Following this document, the Bosch controller use the following ports:

Port 5353: nDNS communication

Port 8443: TCP-connection between Bosch-App and Bosch-Server

Port 123: Network Time Protocol

Port 443: HTTPS

See: “ Jan Bartkowski, Bachelorarbeit Sicherheitsanalyse eines App-gesteuerten Smart Home Systems“, Page 21 and Page 23

<http://www.informatik.uni-bremen.de/~sohr/papers/Bartkowski.pdf>

2. 230V AC-Installation

2.1. The Light sockets has a voltage of 230V AC if power supply on module 1 is “ON”

2.2. For installing the smart two-way-switch you must work with 230V. Before Installing this components switch off power supply and take care that module 2 is de-energized.

3. Controlling of Philips-Hue-devices with the Bosch App.

3.1. To control the Philips hue bulbs with the Bosch App, the following steps are required:

First: Connect the Philips hue bulbs to the Phillips Hue Bridge by using a Phillips Hue App.

Second: Integrate the Philips hue bulbs into the Bosch smart home system by using the Bosch-App.

3.2. After that you can to control the Hue bulbs by the Bosch App.