

Application Note

13.06.2017

Connection of the IoT Chip SE with RFID reader, LCD display and MQTT server

The aim of this demo is to create a connection among the IoT Chip SE, a RFID reader and a LCD display, as well as sending the obtained data to the MQTT server.

When the RFID tag is held to the antenna (up to 7 cm), the RFID reader reads the tag data, such as identification number (ID). This ID number is sent in form of hexadecimal data and converted to decimal representation. It is displayed as a real ID number on the LCD display. Our IoT Chip SE is connected to the MQTT server. The ID number of the RFID tag is published on the server with the relevant topic names.

1/4

Hardware:

IoT Chip SE inclusive Development Board (SYS TEC electronic GmbH)

LCD Display ([Link](#))

Grove – 125 KHz RFID Reader ([Link](#))

RFID Tags 125 KHz

Software:

OpenPCS IEC 61131-3 programming system (version V7.1.0 RV1.00) with SYS TEC Extension (Download from [SYS TEC electronic Website](#))

MQTT Server „Mosquitto“ (Part of the "IoT Chip Utility Package")

WEB Socket Client for MQTT ([Link](#))

Interfaces:

LCD Display via I2C protocol connected to IoT Chip SE

RFID Reader via UART (port number 2)

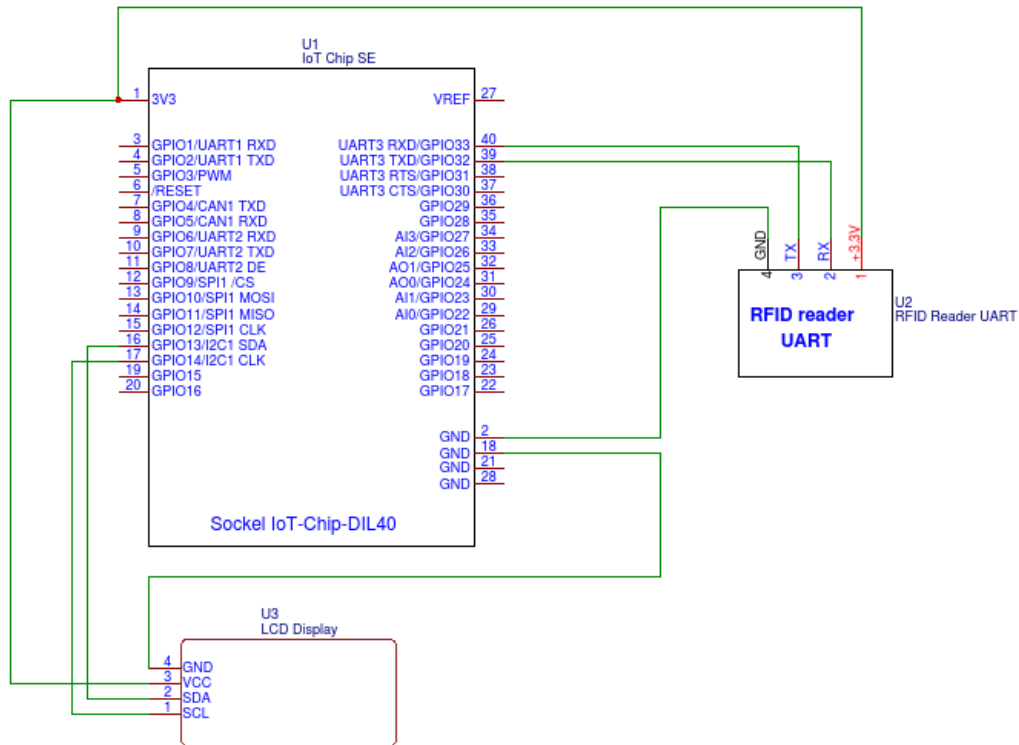


Figure 1: Overview of the possible interfaces.

Setup MQTT Server:

In this example, the server is started on a Windows machine. The program package „Mosquitto“ is part of the "IoT-Chip Utility Package“. Once the source download is complete, the "MQTT Server" folder is opened and the "! Start.bat" file is started there. After you complete these actions, you have an active MQTT server with your IP address.

Setup IoT Chip SE:

In order to be able to set up the IoT Chip SE, OpenPCS (version V7.1.0 RV1.00) must first be downloaded from the SYS TEC electronic website ([Link](#)) and installed. The "IoT-Chip Utility Package" must also be downloaded from the SYS TEC electronic website. Within the "IoT Chip Utility Package" is the project "IoTChip_RFID_LCD_MQTT", which needs to be opened in OpenPCS (see Figure 2).

After opening the IoT chip project in OpenPCS, the following settings must be changed via the button "Resource specification": The hardware module "SYSTEC-IoT Chip-F767 / Z5" and the network connection should be connected to the IoT chip via a static IP address.

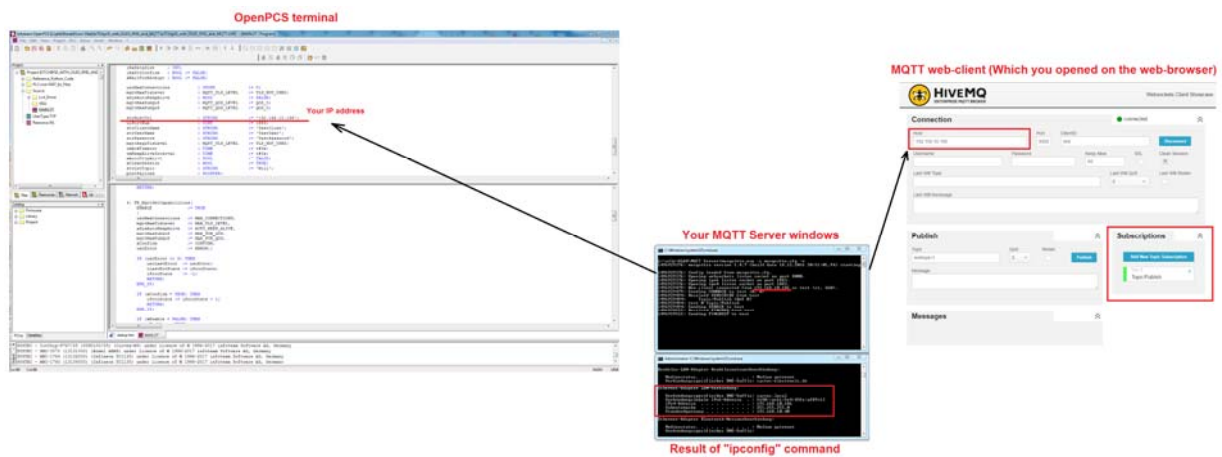


Figure 2: OpenPCS.

3/4

Setup MQTT Client:

Open the following [Link](#) and enter your IP address (the IP address of the computer on which the "Mosquitto_Server" runs) and port 8000. After the connection has been established, the required topic names can be subscribed.

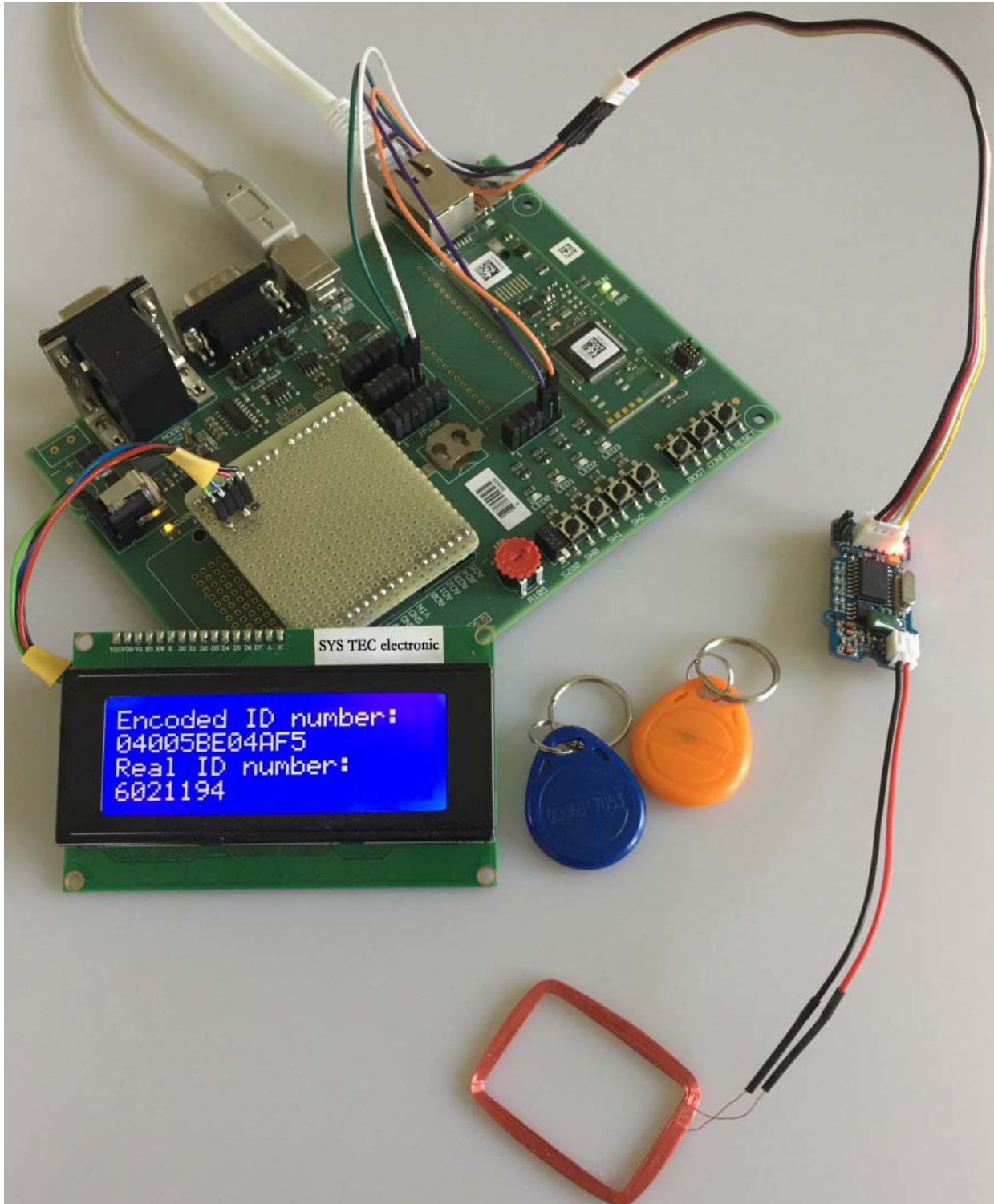


Figure 3: Construction of the demo.