PLANET DEBUG

ASSEMBLY GUIDE

MIKROE
Time-saving embedded tools

PC INDEPENDENT HARDWARE EMBEDDED REMOTE PROGRAMMING / DEBUGGING
WITH LIVE STREAMING

LAN

LAN

CODEGRIP IP

CAMERA IP

WORLD WIDE WEB

USER's LOCATION

PLANET DEBUG LOCATION

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This document should give you an insight into what is needed for one Planet Debug Setup to be installed and connected to the Internet on the Client location. The document covers physical requirements (space) required for the metal frame to be installed, network parameters, and settings that need to be provided/set on hardware, as well as on the MIKROE licensing portal.

INSTALLATION REQUREMENTS

For Planet Debug to be installed in a specific location, the following conditions must be met on the Client (physical host and connection provider) side:

Business requirements:

• Setup must be turned ON 24/7
• Internet connection must be consistent and present all the time
• Setup is not exclusive for the setup holder (unless if it's agreed different)

Physical requirements (per setup):

• One Planet Debug setup requires 90cmx40cmx40cm (35.43"x15.74"x15.74") for placement
• Power wall connection to 220/110V
• Internet Connection (for the CODEGRIP programmer/debugger and IP camera)

Network requirements:

To allow access to devices from NECTO Studios IDE (development board and camera), a client needs to:

• Provide information about Public IP
• Enable port forwarding (NAT) through 4 ports

SETUP ASSEMBLY

Figure 1: What's in the package - Planet Debug

Assembly steps

Step 1: Metal Frame Base

The Planet Debug metal frame cell consists of six main elements (four long pulls/bars and two square bases), used to hold all parts in place.

Frame will arrive assembled like in the picture:

Figure 2: Metal Frame Cell

Step 2: Development board mounting

The Development board or PCB plate needs to be placed on the black side of the metal base with the help of the magnets.

If magnets are not taped to the board, they need to be placed to the back of the board PCB like in the picture. Just remove the protective layer of the 3M tape and paste as many as you can on the board.

Figure 3: Development board with magnets

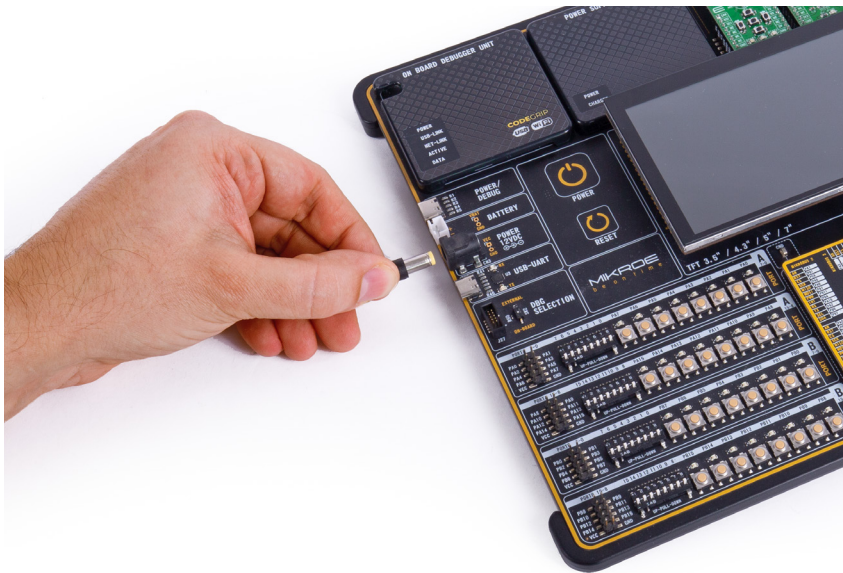Connect 12V power adapter to the 12VDC input of the Development board.

Place the board to the metal base (gray side) in the middle. The final adjustment should be made at the end when you have a video stream.

Figure 4: Connecting 12V power plug to the board

Figure 5: Placing development board into the metal base

Step 3: Lighting

An essential element of the video stream is a good lightning. Light strips are placed inside the metal frame base (black side), located in front of the board.

After successful mouthing, connect the 12V power adapter to the LED lights power chord.

Figure 6: Connecting 12V power plug to the LED connector

Step 4: IP Camera placement

To attach the Axis M1137 IP camera to a metal frame, we will use a plastic camera holder and a camera holder located inside the camera box.

Figure 7: Screw the camera to the mounting bracket

Figure 8: Screw the camera to the camera holder

Step 5: Network equipment

For internet connection, you will need a WiFi device (not included in the package) for the development board and one PoE Switch (included in the package) for Ethernet connection of IP camera.

PoE Switch should be placed on the metal frame base (yellow side) under the camera, on a dedicated place for it by using magnets (included in the package).

After successful mouthing of the **PoE Switch** on the frame, you should connect:

> **IP camera** – with 1x0.5m Ethernet cable Cat 6 S/FTP to one of the 4 available ports (positions 1,2,3,4).
> **UPLINK** - Additional 1x3.0m Ethernet cable goes from the Switch uplink port to your network.
> **Connect DC power wall adapter 51.0V** - 1.25A 63.75W to the switch.

Figure 9: Fully connected PoE switch

NOTE Device Tenda TEF1106P-4-63W is an unmanaged PoE switch. Configuration is not needed; just plug IP camera and Access Point to ports 1-4. UPLINK port plug to your LAN network.

Step 6: Powering

As a final step, you need to insert a development board 12VDC adapter **[1]**, light 12VDC adapter **[2]** and PoE switch adapter **[3]** to the extension cord before connecting it to the wall.

Figure 10: Example of the fully assembled Planet Debug cell

CODEGRIP CONFIGURATION

Install CODEGRIP Suite

To use and access the development board from the NECTO Studio IDE through the WiFi, you will need to enable WiFi and SSL licenses. Download the CODEGRIP Suite application from the link **https://www.mikroe.com/setup/codegrip** and follow the installation steps.

CODEGRIP Suite update

Run the CODEGRIP Suite application and open the Updates Menu item **[1]** under the HELP Menu.

Under the Suite tab **[2]**, click on the CHECK FOR UPDATES **[3]** button to check if a more recent version of the application is available.

In the case when there is a new version available, confirm the update procedure.
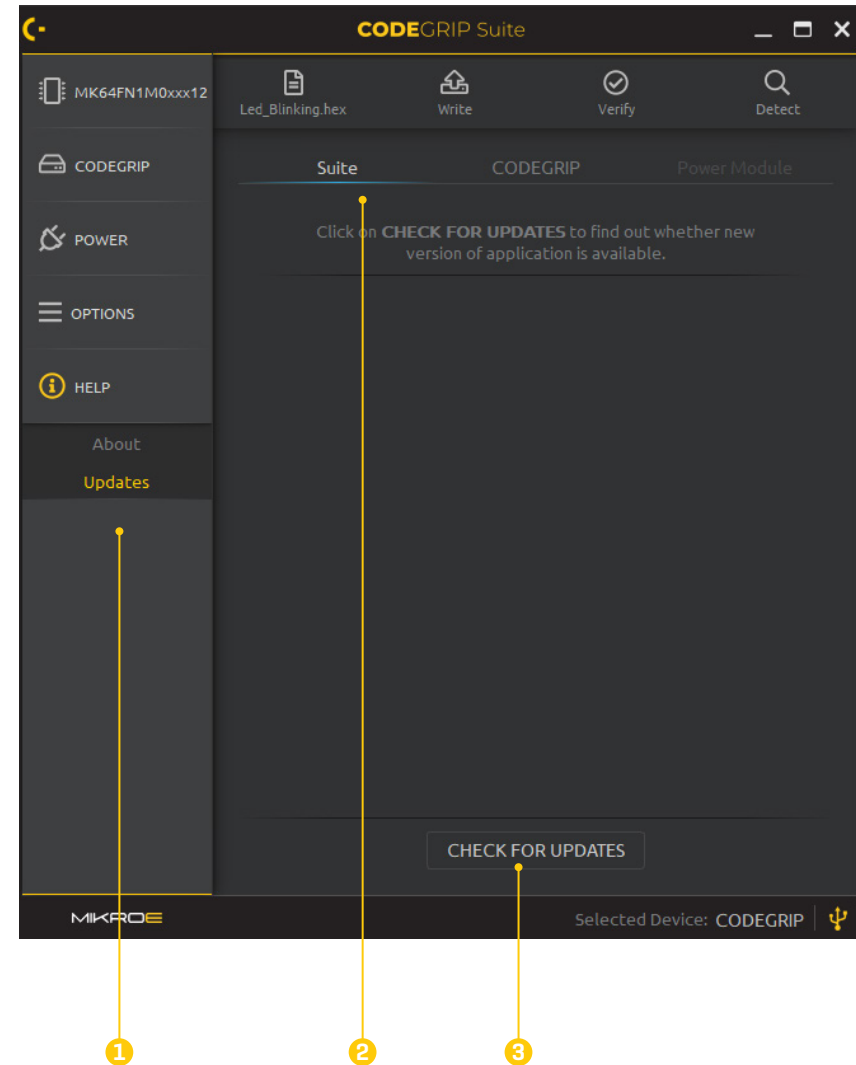
CODEGRIP Hardware Update

Connect the stand-alone/on-board CODEGRIP with a PC using the USB-C cable. If everything is connected properly, POWER, ACTIVE and USB LINK LED indicators on the CODEGRIP device should be ON.

Under CODEGRIP tab **[1]** follow instruction on how to detect CODEGRIP device in a bootloader mode.

Power cycle CODEGRIP module and click SCAN DEVICES button **[2]**.

If there is a newer version of firmware available confirm the update procedure.
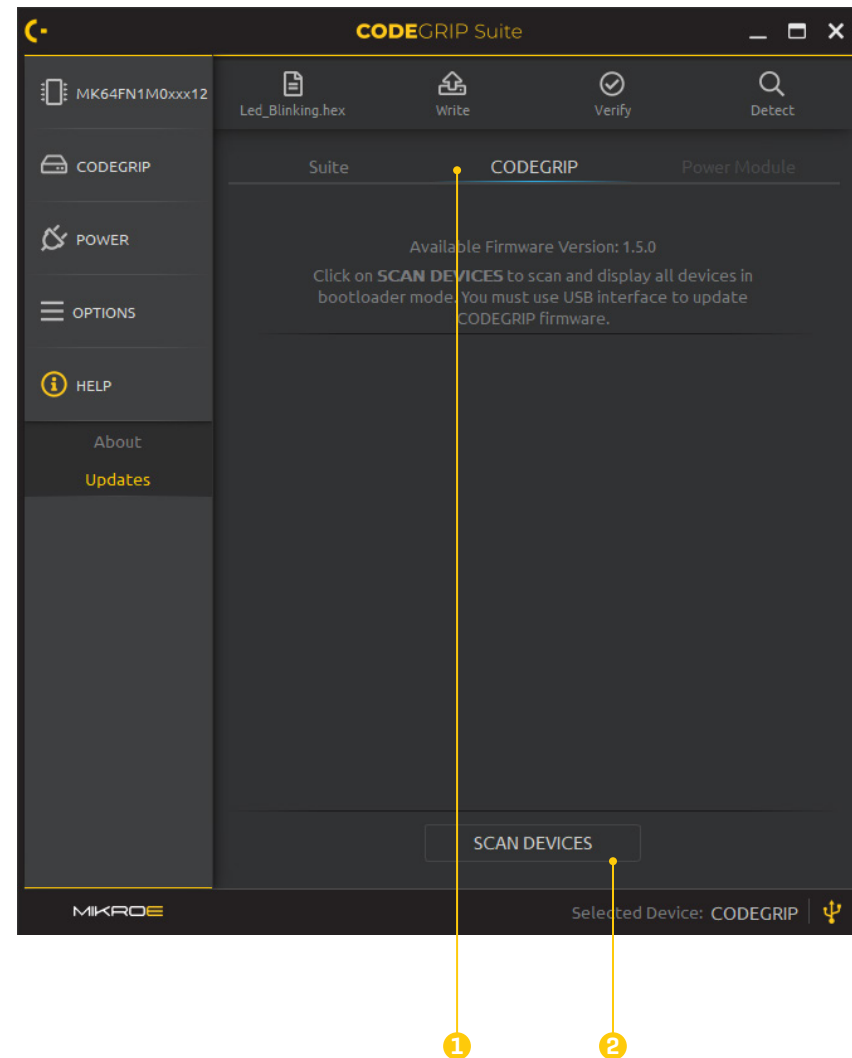
Select CODEGRIP Device

Open the CODEGRIP menu **[1]** and select the newly unfolded Scanning menu item.

Click on the SCAN DEVICES button **[2]** to get a list of available CODEGRIP devices.

To connect with your CODEGRIP over a USB cable, click the USB Link button **[3]**.

If more than one CODEGRIP is available, identify yours by its serial number printed on the bottom side
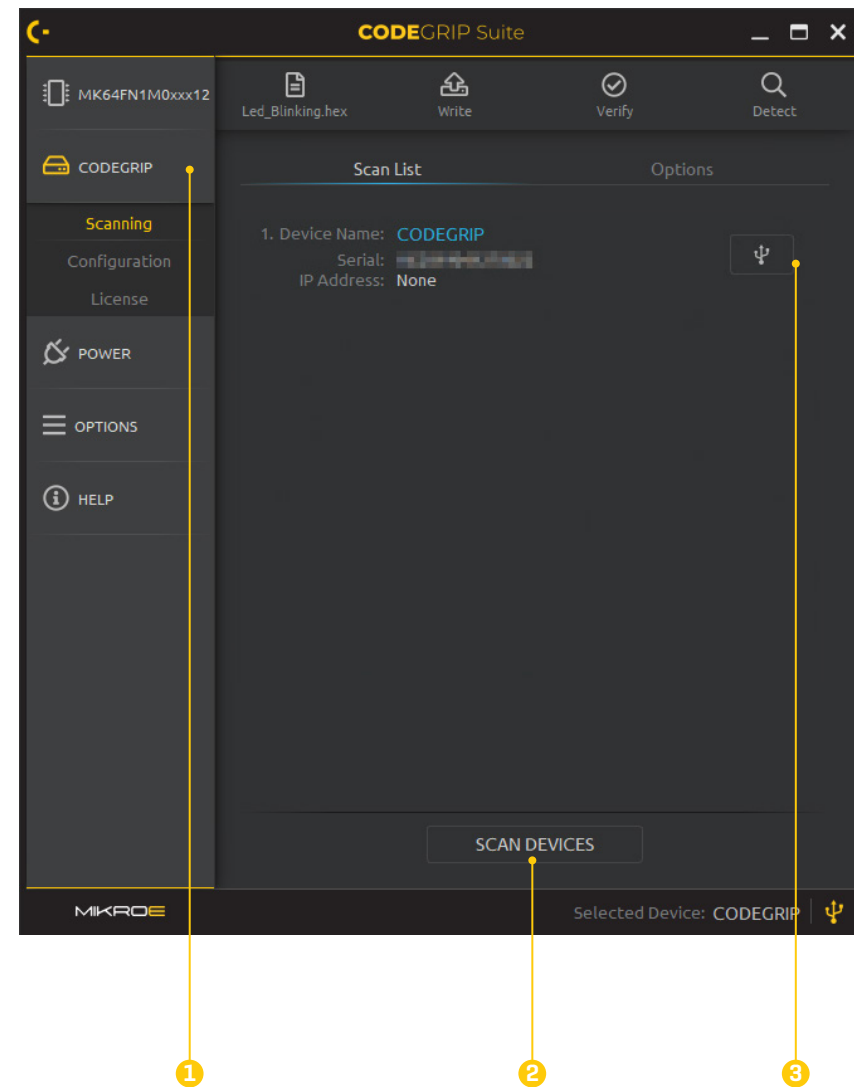
Activate Licenses

To enable the WiFi interface on the CODEGRIP device, licensing of WiFi and SSL functionalities need to be done. Please visit the following links to acquire an appropriate registration code for the following CODEGRIP features:

Open the *CODEGRIP* menu **[1]** and select the newly unfolded *License* menu item **[2]**.

Fill in the user registration information **[3]**. All fields are mandatory in order to proceed with the licensing process.

Click on the ⊕ button **[4]** and a dialog window will pop up. Enter your registration code in the text field **[5]** and click the OK button. The entered registration code will appear in the *Registration Codes* subsection.
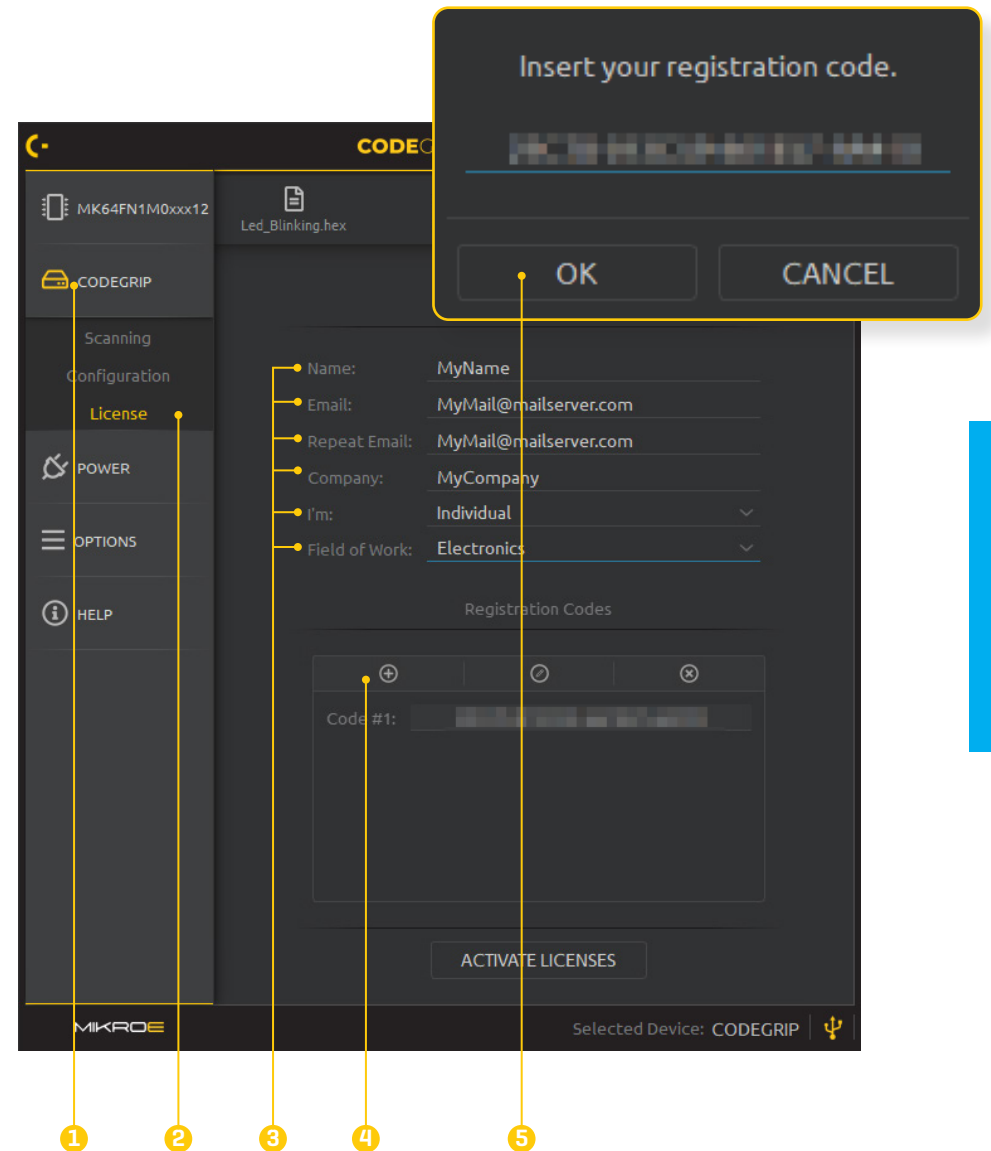
Insert your registration code.

OK   CANCEL

CODEGRIP

After a valid registration code(s) is added, click on the *ACTIVATE LICENSES* button **(6)**. A confirmation window will appear, suggesting that you should reload the CODEGRIP configuration. Click the OK button to close this window.

Once the licensing process is successfully completed, the licenses will be permanently stored within the CODEGRIP device.

For WiFi license, please visit
www.mikroe.com/codegrip-wifi-license

For SSL security license, please visit
www.mikroe.com/codegrip-ssl-license
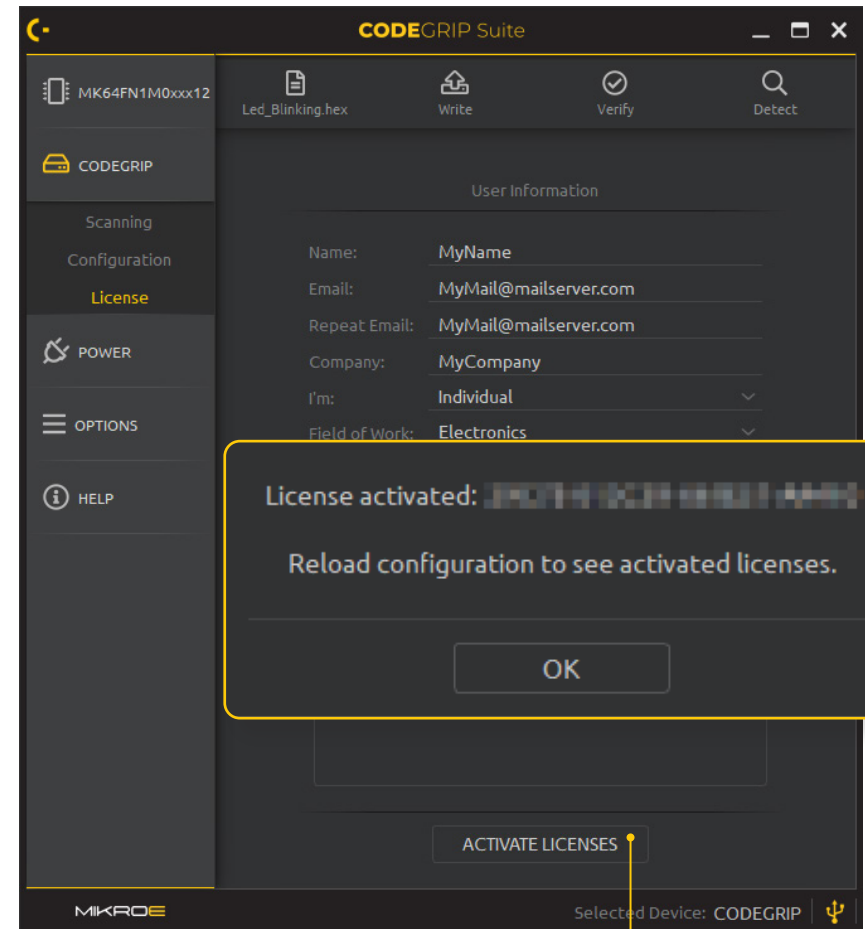
Configure WiFi General Options

Open the CODEGRIP Menu **[1]** and select the newly unfolded Configuration Menu item **[2]**.

Open tab WiFi General **[3]** and set configuration as shown in the image below.
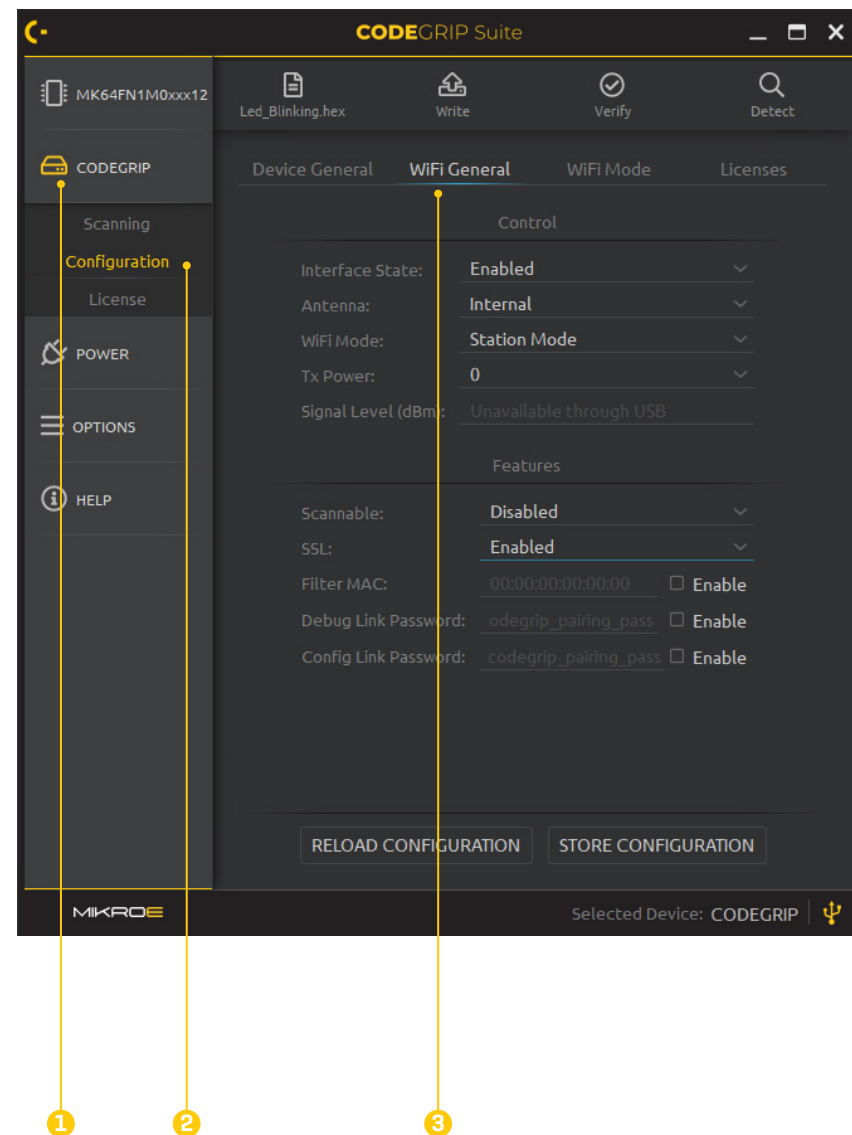
Configure WiFi Mode Options

Open tab WiFi Mode **[1]** and fill in the fields under the **Station Mode [2]** section:

SSID: The SSID field should hold the name of your WiFi device, user can change and add custom Access Point name that will be used for CODEGRIP connection.

Password: If the WiFi network to which the connection is attempted requires a password, it can be specified in this field.

Secure type: The security protocol selected here must match the security protocol used on a WiFi network to which the connection is attempted.

IP Settings: Select option Use following static IP addresses. Allows the user to enter static IP address settings for the WiFi network manually.

IP Address, Subnet mask, Gateway, DNS: The IP address of the CODEGRIP device should be set here.

Store selected configuration

Once the appropriate options are filled, save them in the device using the STORE CONFIGURATION button **[3]**. Device will be restarted after configuration storing is finished.
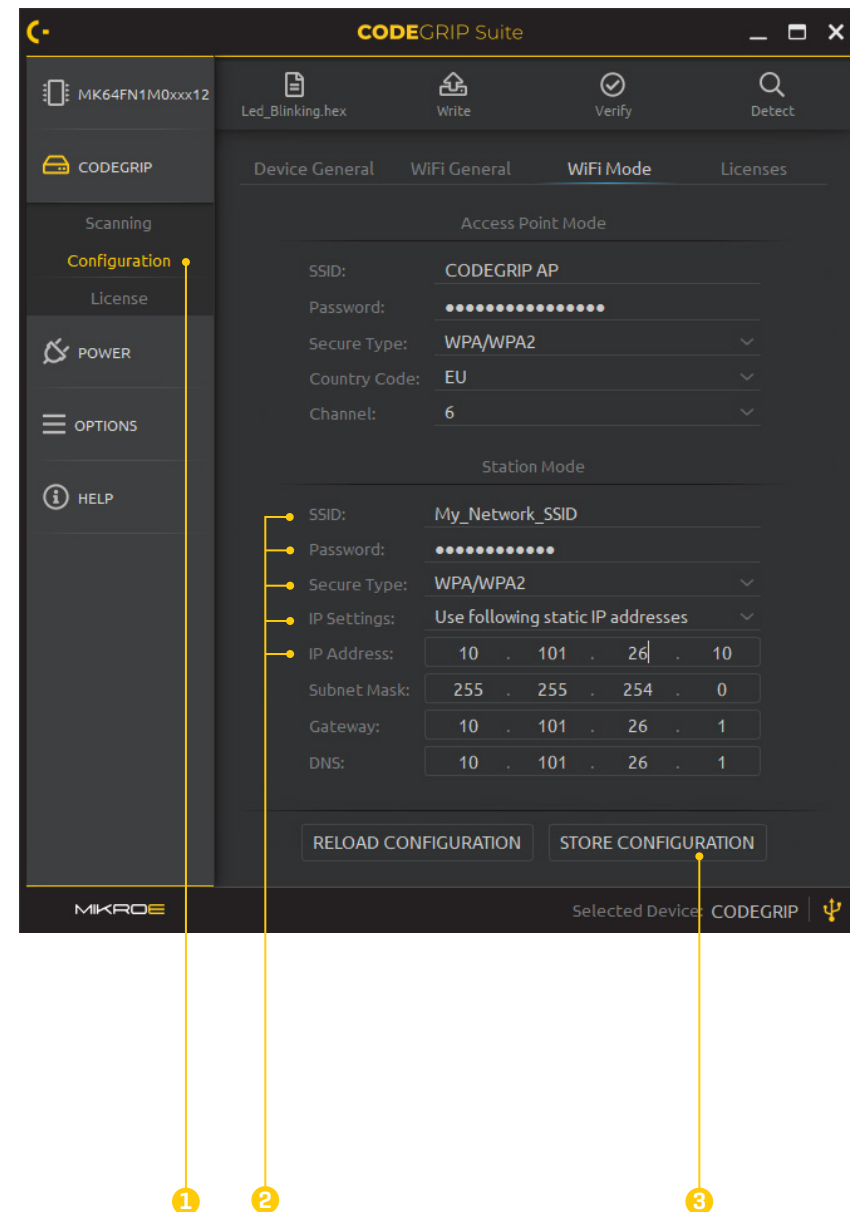
CAMERA CONFIGURATION

Axis IP Utility setup

In order to do the initial IP camera setup, you should install the AXIS IP Utility.

After starting, the AXIS IP Utility it will automatically display all cameras on your subnet with their Name, IP Address and Serial Number.
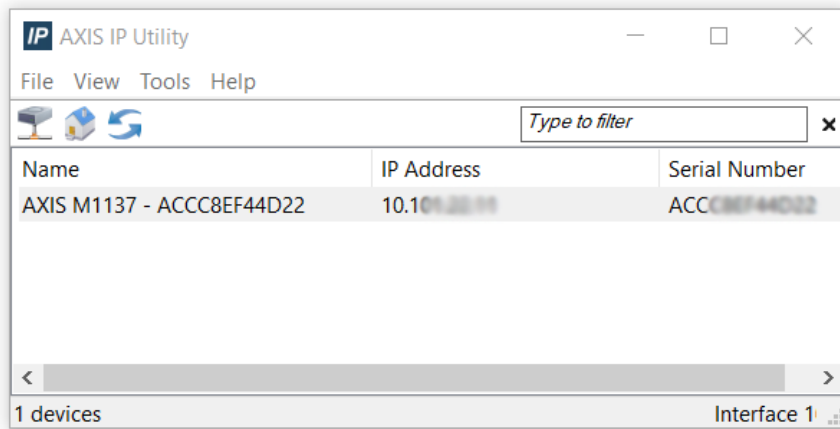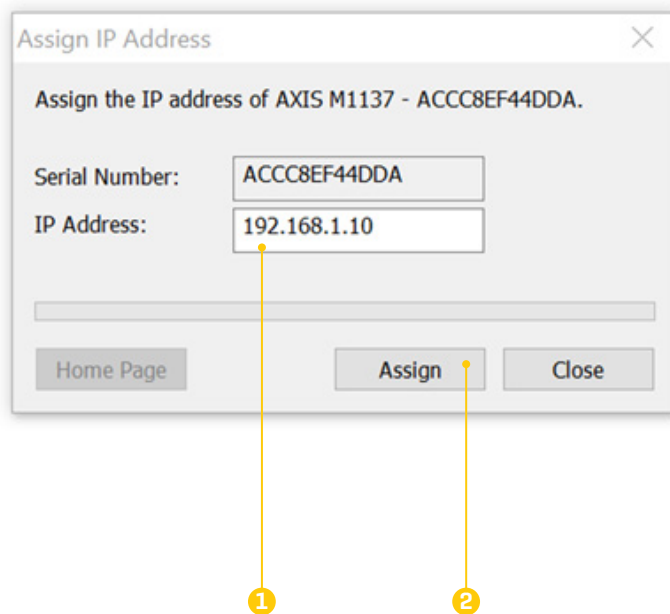
As a first step you need to set a static IP address for your camera because it will be required for Port Forwarding on your router.

In the AXIS IP Utility right-click on desired device **[1]** and select Assign IP Address **[2]**.

Axis Home Page Configuration

Inside the window "Assign IP Address ", put the static IP address **[1]** you will use and then click Assign **[2]**.

Now when you have a static IP Address set on your camera, you can access it for making final adjustments needed for this setup. You can do that by putting the IP address directly to the Web browser, or from the AXIS IP Utility (*double-click or right-click on a device and select* **View Home Page** – which will automatically open your default browser).
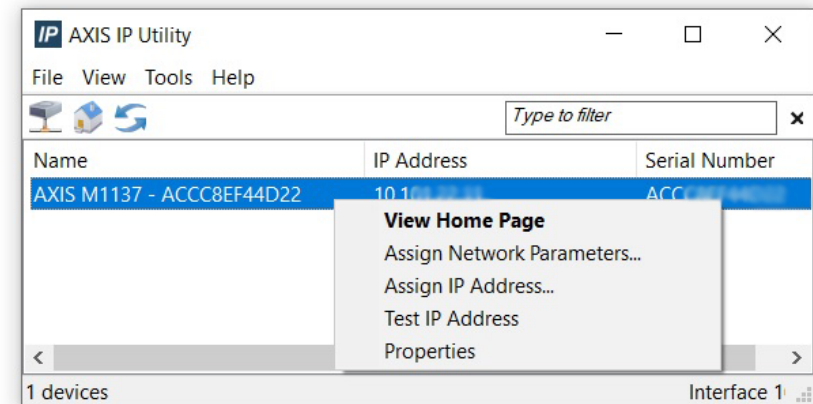
Get Started

When you are opening the AXIS M1137 Network Camera Home Page for the first time you need to initially configure several things through the Get Started windows:

1. Set up the root *password*

*optional - you can **uncheck** below **Share data** with developers

2. Choose Power Line Frequency

      a. Europe - 50 Hz

      b. USA - 60 Hz
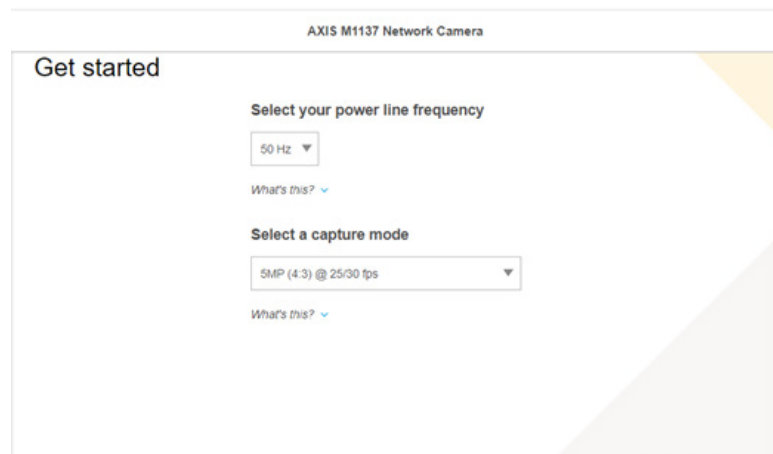
3. Orientation - set to **180** degrees from the drop-down Menu

Settings

Inside the AXIS M1137 Network Camera Home Page window, at the lower right corner, click ∧ Settings and set the following:

Image tab

Contrast - **55**

Sharpness - **60**

Orientation - **180 degree** *(if not already set from Get Started)*

Light environment - **Fixed - fluorescent 1**

Exposure mode - **Flicker-free 50 or 60 Hz** *(depends on 2nd step on initial configuration)*

Max gain - **42 dB**

Defog - **turn ON**

Stream tab

Resolution - **2048x1536(4:3)**

Frame rate - **25 or 30 fps** *(depends on 2nd step in initial configuration)*

      Europe - 25 fps

      USA - 30 fps

Compression - **60**
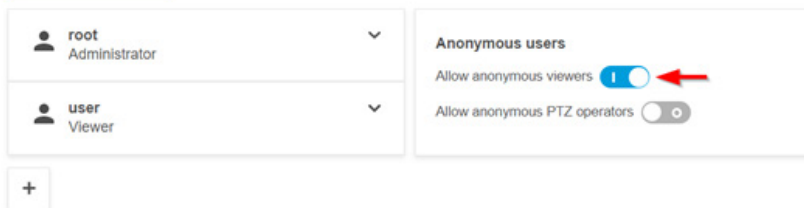
Audio tab

Allow audio - **turn OFF**

System tab

Select **Users**
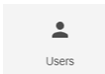
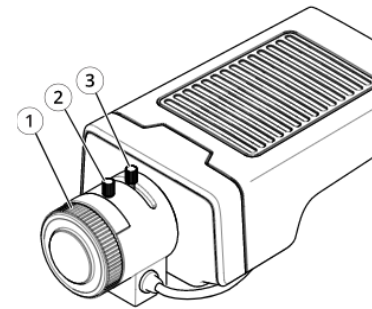Then check slider to **Allow anonymous viewers** field

AXIS M1137 Network Camera

Camera Adjustment

To make a Development Board clearly visible, you need to adjust Focus and Zoom. *If you didn't,* place the IP camera into the metal frame field and Development Board to the magnetic field (opposite of the IP camera).

1. Focus ring

2. Focus ring lock

3. Zoom puller

Position - Access the IP camera through the AXIS M1137 Network Camera Home Page to check the position and visibility of the Development Board. Use another device for this step, such as a laptop/PC/phone to centralize the Development board or camera with hand by looking at your stream.

Zoom puller [3] - loosen a screw and move it to the end in the right direction (T sign, stands for Telephoto). Screw up when you finish

Focus - loosen focus ring lock screw **[2]** and move focus ring **[1]** CW/CCW until you get the best-detailed picture of the Development Board. Screw up focus ring lock screw **[2]** when you finish adjustments of the zoom.

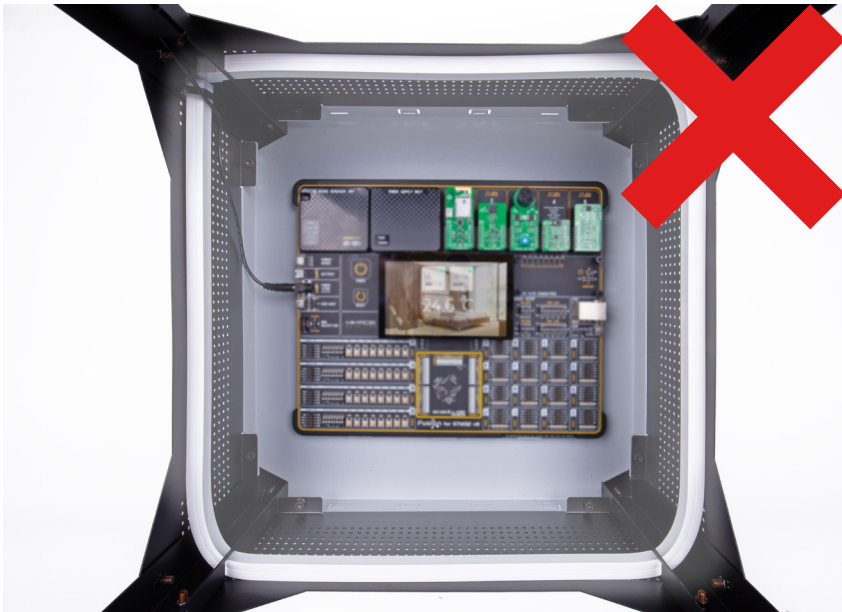Your Camera Zoom is adjusted correctly when you are able to see your board clearly like on the *Figure: 12.*
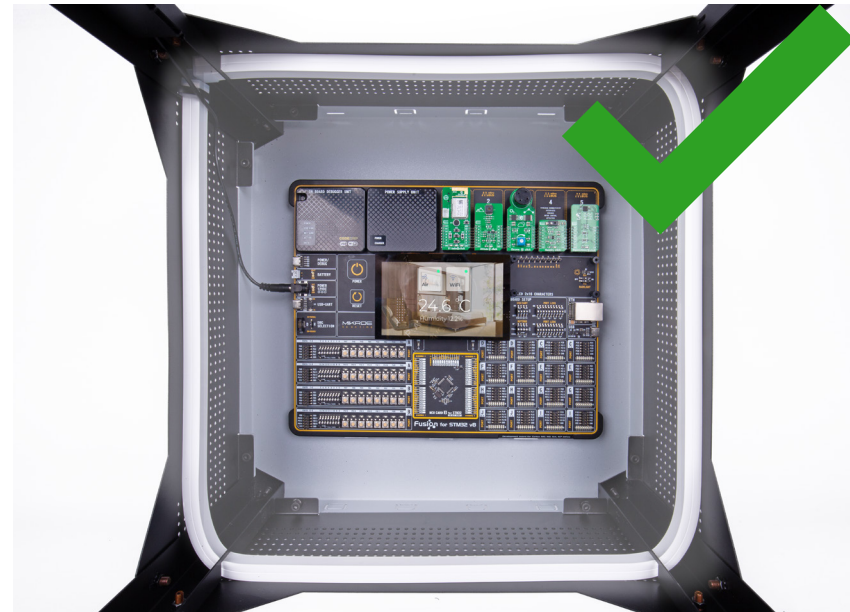

Figure 11: Not adjusted Zoom level

Figure 12: Correctly adjusted Zoom level

SETUP TESTING AND CONFIGURATION

After finalizing all points such as assembly, the configuration of CODEGRIP and IP camera, as well as the port and IP configuration of the network, the final step is adding all parameters to the NECTO Studio License Portal and testing them.

Use and fill this **EXCEL FILE** for the next steps.

Network IP configuration

To complete your Planet Debug setup, precisely **Development board** and **IP Camera**, to be accessible from the NECTO Studio IDE, we need you to forward ports from your router/ISP – **port forwarding.**

In total, you would need to open 4 ports (1 for IP camera, 3 for board) per setup.

Device Properties						
PID	**Device Name**	**Serial Number**	**Public IP Address**	**External Ports**	**Local IP Address**	**Local Ports**
MIKROE-3808	EasyPIC PRO v8	(15 characters)	217.2.2.2	20101 (TCP & UDP)	10.10.10.11	49001 (TCP & UDP)
				20102 (TCP)		49002 (TCP)
	Axis M1137		217.2.2.2	30101 (TCP)	10.10.10.21	80 (TCP)

Example of device properties table

Development board properties

Besides adding IP addresses and ports to the license portal, MIKROE will need information about development board configuration such as onboard MCU (with crystal oscillator if it is exchangeable) or MCU card, add-on boards and their exact position, display, LCD.

Customer needs to provide filled **Development board components** table, as in the example below.

Development Board Components		
Socket	**Product Name**	**PID**
microcontroller	MCU Card 13 for STM32 STM32L4S5ZI	MIKROE-3876
display connector	TFT Board 5 RESISTIVE	MIKROE-3792
LCD connector	Character LCD 2X16 with blue backlight	MIKROE-55
mikroBUS 1	GSM Click	MIKROE-1234
mikroBUS 2	PROTO Click	MIKROE-2345
mikroBUS 3	OLED C Click	MIKROE-2850
mikroBUS 4	Temp&Hum Click	MIKROE-1534
mikroBUS 5	Relay Click	MIKROE-356

Example of development board components table

Setup testing in NECTO Studio IDE

After you have successfully enabled and filled the "Device Properties" and "Development boards components" tables, send your excel file to MIKROE for testing and adding a new setup to the NECTO Studio IDE.

In case you have some additional questions contact our MIKROE **Technical Support Team.**

DISCLAIMER

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