Panasonic
INDUSTRY

Connected by Panasonic Industry

Demonstration Setup Instructions

Application Note

Rev. 1.3

Wireless Connectivity

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1 About This Document

1.1 Purpose and Audience

This Application Note explains the necessary setup for some of the demos that are part of the mobile application “Connected by Panasonic Industry”.

1.2 Revision History

Revision	Date	Modifications/Remarks
1.0	2020-02-13	First version
1.1	2020-04-08	Updated chapter “Connected by Panasonic Industry for Windows“. Updated formatting.
1.2	2020-08-27	Added chapter “PAN1780”. Updated various pictures to reflect addition of PAN1780.
1.3	2021-10-07	Removed chapters for obsolete modules. Added module PAN1781 to chapter “PAN1780”. Removed chapter "Connected by Panasonic Industry for Windows".

1.3 Use of Symbols

Symbol	Description
	**Note** Indicates important information for the proper use of the product. Non-observance can lead to errors.
	**Attention** Indicates important notes that, if not observed, can put the product’s functionality at risk.
	**Tip** Indicates useful information designed to facilitate working with the software.
⇨ [chapter number] [chapter title]	**Cross reference** Indicates cross references within the document. **Example:** Description of the symbols used in this document ⇨ 1.3 Use of Symbols.
✓	**Requirement** Indicates a requirement that must be met before the corresponding tasks can be completed.
➔	**Result** Indicates the result of a task or the result of a series of tasks.

Symbol	Description
This font	**GUI text** Indicates fixed terms and text of the graphical user interface. **Example:** Click **Save**.
Menu > **Menu item**	**Path** Indicates a path, e.g. to access a dialog. **Example:** In the menu, select **File** > **Setup page**.
`This font`	**File names, messages, user input** Indicates file names or messages and information displayed on the screen or to be selected or entered by the user. **Examples:** `pan1780.c` contains the actual module initialization. The message `Failed to save your data` is displayed. Enter the value `Product 123`.
Key	**Key** Indicates a key on the keyboard, e.g. **F10**.

1.4 Related Documents

For related documents please refer to the Panasonic website ⇨ 6.2 Product Information.

2 Overview

This Application Note explains the necessary setup and individual steps for the demos that are part of the mobile application “Connected by Panasonic Industry”.

2.1 Prerequisites

The following starter kit boards or evaluation boards (EVB) are compatible with the demos:

Module	Order Number
PAN1780	ENW89854AXKF
PAN1781	ENW89857AXKF
PAN4620	ENWC9B01AQEF
PAN9026	ENWF9201AXEF

2.2 Download and Contents

All necessary parts for the demos are included in a single ZIP file.

The ZIP file is present on the Panasonic wireless modules website in the section “Downloads” of each of the modules that are supported https://industry.panasonic.eu/products/devices/wireless-connectivity/connected-panasonic-industry.

It includes the firmware files for the PAN1780, PAN1781, and PAN4620 modules which are used in the demos. All other modules do not need a special firmware and can be operated with their default configuration.

3 PAN1780/PAN1781

For PAN1780 and PAN1781 one demo is implemented: Cable Replacement.

The following instructions are based on PAN1780 EVB, but also valid for the PAN1781 EVB.

Open the Demo Section

In the application “Connected by Panasonic Industry” press **DEMOS** on the main module section to open the demo section.

3.1 Requirements

The demo runs on a PAN1780 EVB or PAN1781 EVB.

All software packages can be found on the product website in the section “Downloads” https://industry.panasonic.eu/devices/wireless-connectivity/connected-panasonic-industry?langreferrer=eu.industrial.panasonic.com.

3.2 Hardware Preparation

For PAN1780 EVB an initial setup is necessary: Please refer to the “PAN1780 Module Integration Guide” (Default Jumper Configuration).

For PAN1781 EVB an initial setup is necessary: Use the default jumper configuration which is shown by the standard configuration markers on the PCB silkscreen.

3.3 Software Preparation

For PAN1780 and PAN1781: Program the prebuilt firmware file.

The files are included in the software package.

The Segger J-Link OB Debug Probe can be used to flash the firmware.

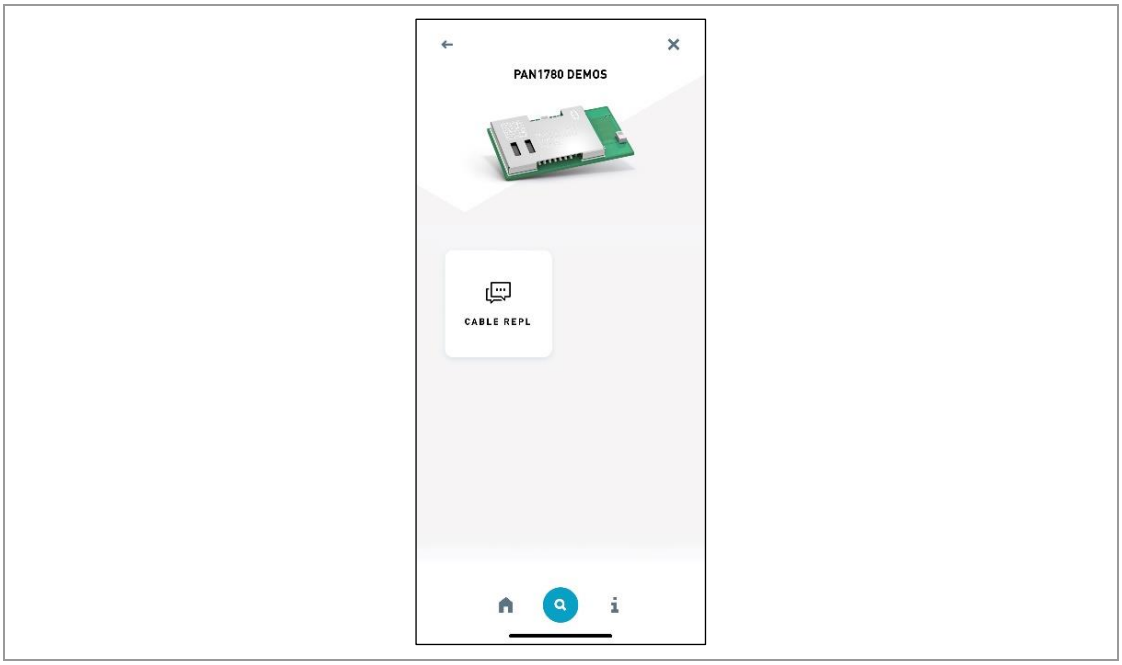
For PAN1780: Use the USB connector “X2” to access the J-Link OB Debug Probe.

For PAN1781: Use the USB connector “x1” to access the J-Link OB Debug Probe.

For detailed instructions how to flash the firmware, please refer to the “nRF Connect Programmer” documentation https://infocenter.nordicsemi.com/index.jsp?topic=%2Fug_nc_programmer%2FUG%2Fnrf_connect_programmer%2Fncp_introduction.html.

3.4 Demo: Cable Replacement

The demo can be started individually from the demo section.



In the demo “Cable Replacement”, the module acts as a Bluetooth LE peripheral device and emulates a remote device that exchanges data with the mobile device.

To use this functionality, the following steps must be done:

1. Establish a Connection
2. Connect the Device
3. Receive and transmit Messages

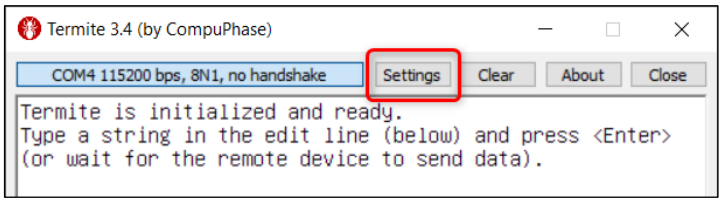
Establish a Connection

The following requirement must be met:

✓ A terminal software is installed to receive and send data on PC side.

If you do not have any terminal application yet, you can try **Termite** from https://www.compuphase.com/software_termite.htm. In the following steps **Termite** is used.

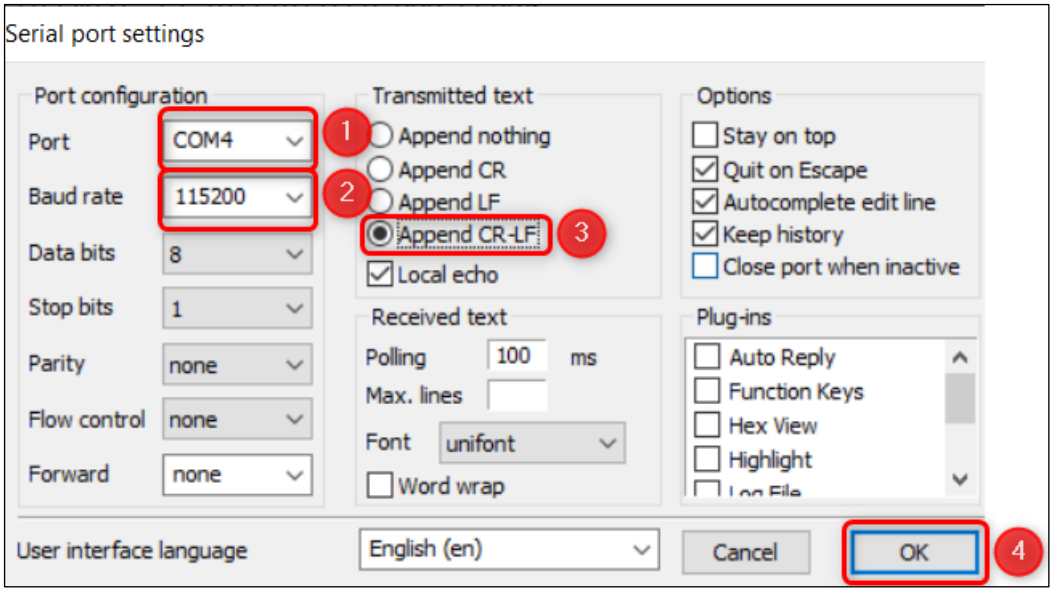
1. Open **Termite**.
2. Click **Settings**.



3. Chose the COM port of the attached EVB (1).

How to detect the correct COM port:

Press the reset button of the EVB while the COM port is opened. If it is the correct COM port, the message “UART started.” is displayed.



4. Chose a baudrate of **115200** (2).
5. Select **Append CR-LF** (3).
6. Click **OK** (4).
   ➔ The message “UART started.” is displayed.

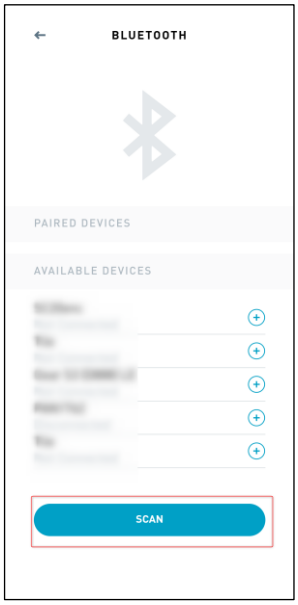
Now the device can be connected.

Connect the Device

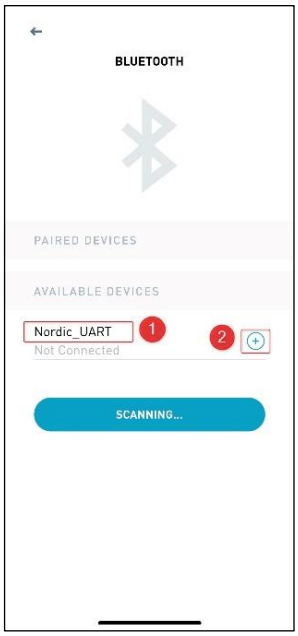
The following requirement must be met:

✓ The connection is established ⇨ Establish a Connection.

1. Press **Scan** to scan for nearby devices.



2. Locate the device “Nordic_UART” (1).



3. Press on the button ⊕ (2) to connect to the device.
   - ➔ The status changes from “Disconnected” to “Connected”.
   - ➔ The button ⊕ changes to the button ›.

4. Press on the button to continue with the demo.

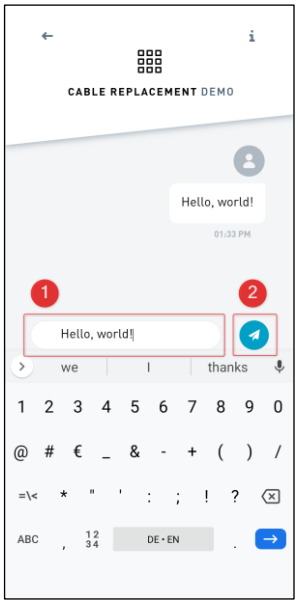
Now the application is ready to receive and transmit messages.

Receive and transmit Messages

The following requirement must be met:

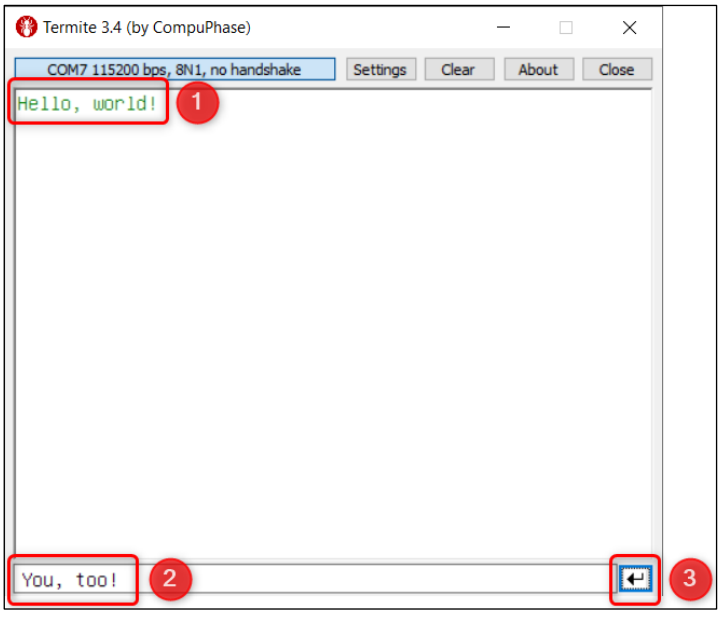
✓ The device is connected ⇨ Connect the Device.

1. Type in a message to be sent (1).



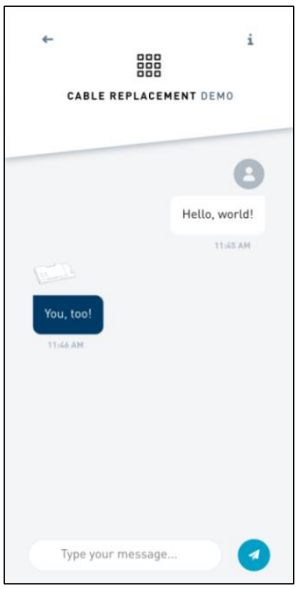
2. Press on the button (2) to send the message.

➔ The received message will be shown in the upper window (1).



3. A return message may be typed in the box (2).
4. Click on the button “Send” (3) to send the message.

➔ The received message will be shown in the demo “Cable Replacement” window.

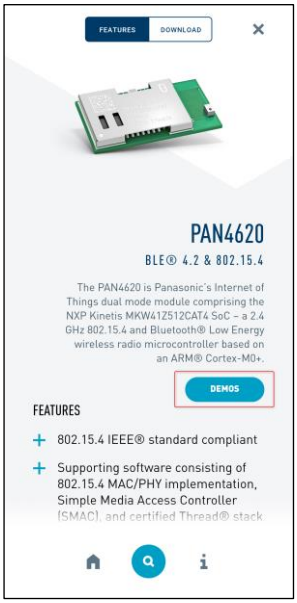


4 PAN4620

For PAN4620 one demo is implemented: Lighting Mesh.

Open the Demo Section

Press **DEMOS** on the main PAN4620 section to open the demo section.



4.1 Requirements

The demos run on a PAN4620 EVB.

> For the best user experience it is necessary to use at least two PAN4620 EVBs. More EVBs can be used as well.

Detailed instructions that are needed in the following chapters are included in the “PAN4620 Integration Guide”.

All packages can be found on the product website in the section “Downloads” https://industry.panasonic.eu/devices/wireless-connectivity/connected-panasonic-industry?langreferrer=eu.industrial.panasonic.com.

4.2 Hardware Preparation

The PAN4620 EVB must be in its default state as described in the “PAN4620 Integration Guide“ (Jumper Start up Configuration).

4.3 Software Preparation

Program the demo into the built-in flash of the PAN4620 using the tool “Test Tool 12”. The demo is available in `pan4620-multipurpose-firmware.bin`.

For detailed instructions how to do the programming, please refer to the “PAN4620 Integration Guide” (Using Test Tool 12).

After programming, the module must be reset to factory defaults.

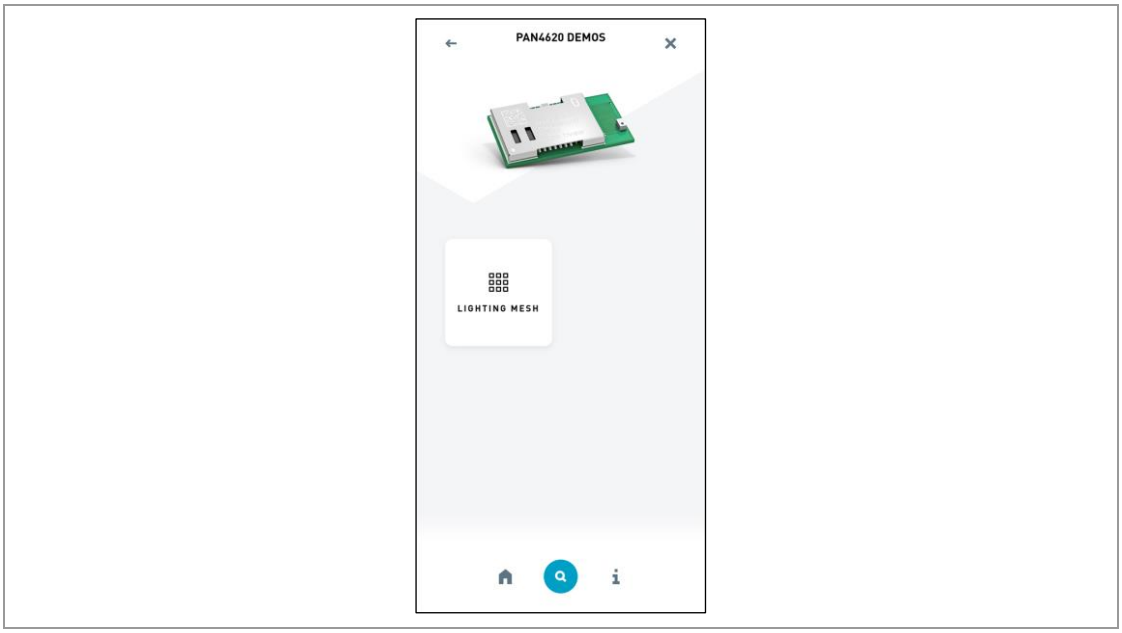
It is mandatory to reset the module to factory defaults after reprogramming. Reprogramming will not erase certain configuration settings, which can lead to weird behaviour.

Reset to Factory Defaults

1. Powering up the module.
2. Press the button **SW3** for at least 15 seconds.
   ➔ When the button is released, the module will reset. The on-board LED will start blinking blue.
3. Repeat the software preparation step with all available PAN4620 EVBs.

4.4 Demo: Lighting Mesh

The demo can be started individually from the demo section.



Lighting Mesh

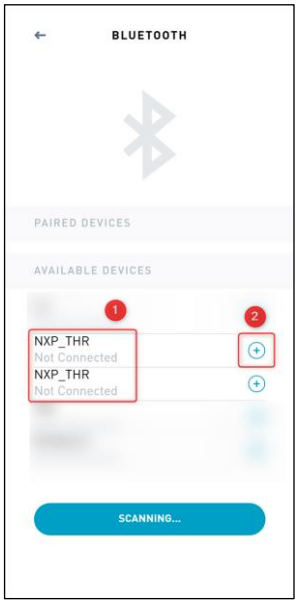
The demo closely follows the demo as described in the “PAN4620 Integration Guide” (Using Thread Example Application).

The main difference is that the serial console is replaced by the mobile application “Connected by Panasonic Industry”. Because of that, no typing in of commands is necessary and the demo is easy to use.

The following requirement must be met:

✓ All PAN460 EVBs are started up and are reset to factory defaults ⇨ 4.3 Software Preparation.

1. Start the demo “Lighting Mesh” from the PAN4620 demo section.
2. Make sure that all devices named “NXP_THR” are found (1).

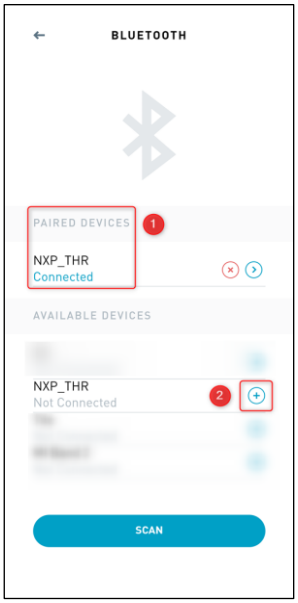


3. Press on one of the button ⊕ (2) to initiate a connection.
   ➔ The application will initiate a pairing process with the PAN4620 module.
4. Follow the steps to complete the pairing.

PIN Code

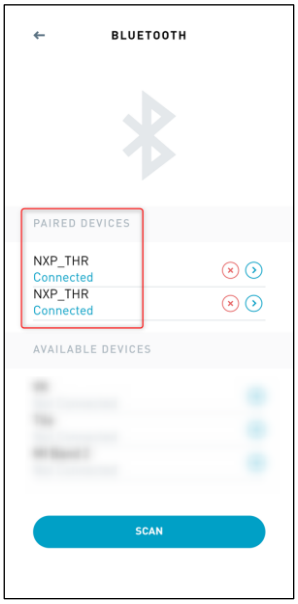
If a PIN code is requested please enter **999999**.

➔ The PAN4620 module will be added to the list of paired devices (1).

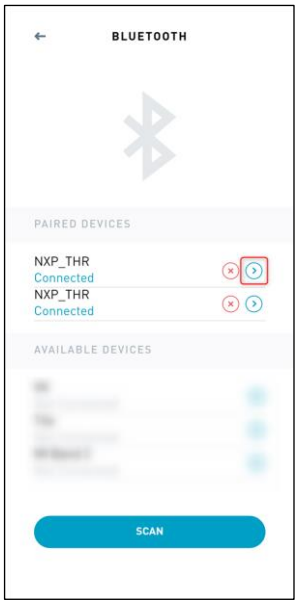


5. Continue with all the remaining PAN4620 devices named “NXP_THR”: Press on the button ⊕ (2) and following the pairing procedure.

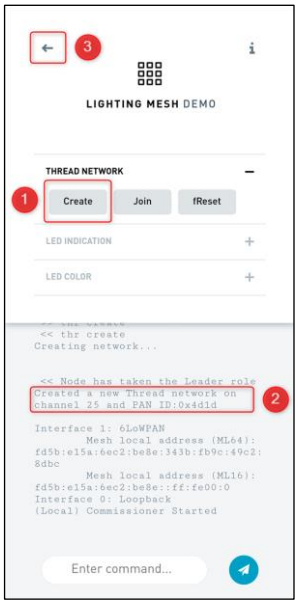
➔ All PAN4620 modules named “NXP_THR” are added to the list of paired devices.



6. Press on the button ⟩ to navigate to the demo options section for the first PAN4620 module.



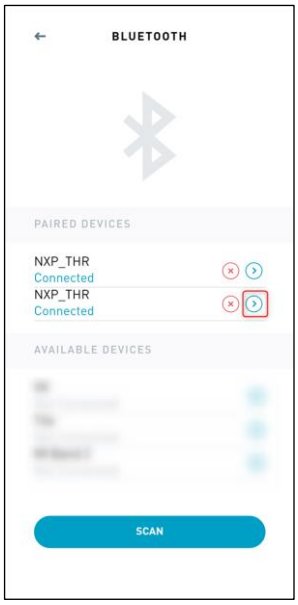
7. Press **Create** (1) to create a new Thread network.



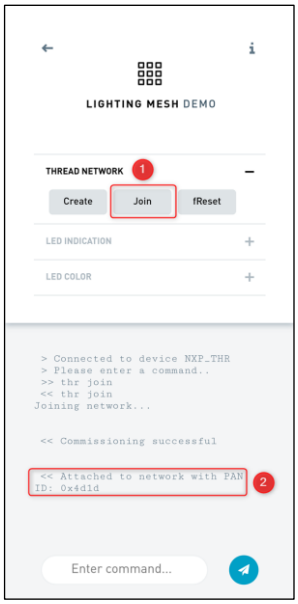
➔ Success is indicated in the log window below (2) and the new network ID is mentioned.

8. Press on the button ← (3) to move back to the general demo section.

9. Press on the button ➔ to navigate to the demo options section for any other PAN4620 module.



10. Press **Join** (1) to join the existing Thread network.



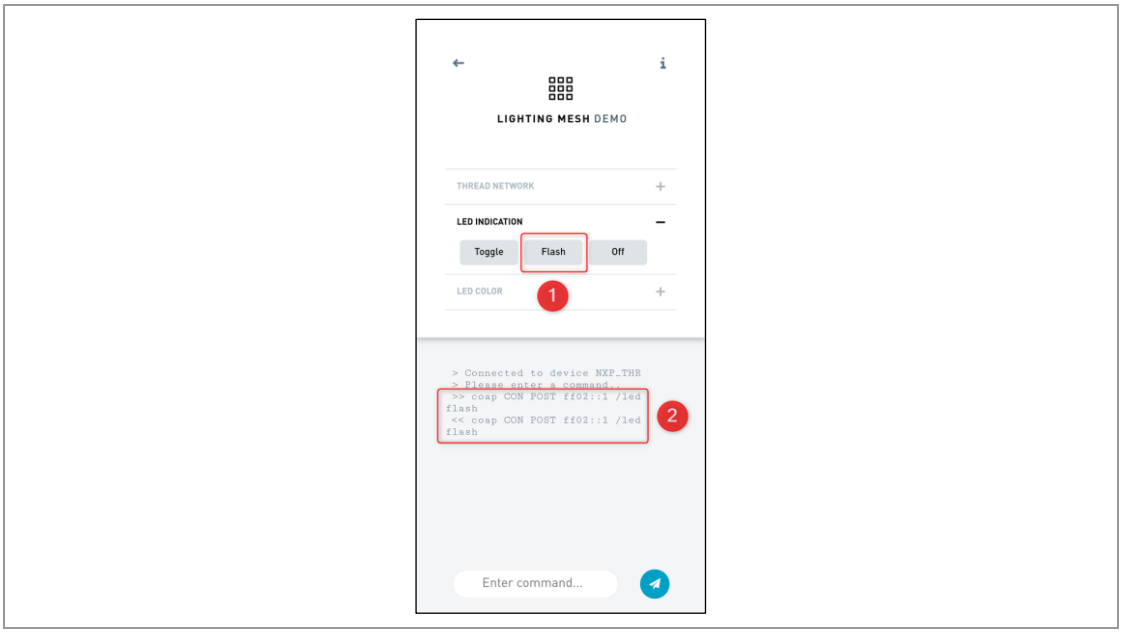
➔ Success is indicated in the log window below (2) and the network ID of the joined network is mentioned.

Now the Thread network is populated and is ready for use.

Change LED Indication

The LED indication can be changed: For example, the LED can be turned to flashing.

Press **Flash** (1).



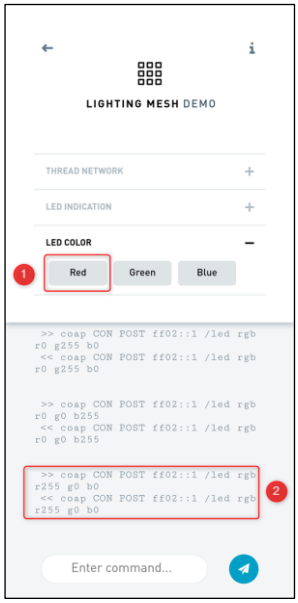
➔ The command execution and the status of the operation is output in the log window below (2).

Change LED Color

> All commands are executed on all nodes in the Thread network except for the one the command was executed on.

The LED color can be changed: For example, the LED can be turned to red.

Press **Red** (1).



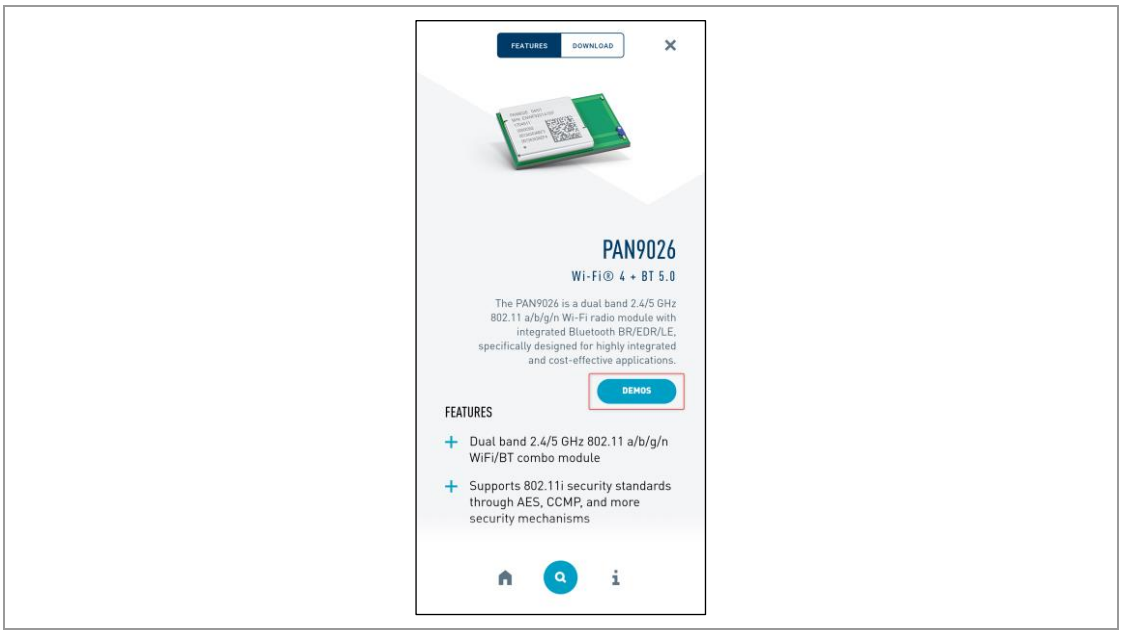
The command execution and the status of the operation is output in the log window below (2).

5 PAN9026

For PAN9026 one demo is implemented: IFrame.

Open the Demo Section

Press **DEMOS** on the main PAN9026 section to open the demo section.



5.1 Requirements

The demos run on a PAN9026-IMX EVB.

Detailed instructions that are needed in the following chapters are included in the “PAN9026 Quick Start Guide”.

All packages can be found on the product website in the section “Downloads” https://industry.panasonic.eu/devices/wireless-connectivity/connected-panasonic-industry?langreferrer=eu.industrial.panasonic.com.

5.2 Hardware Preparation

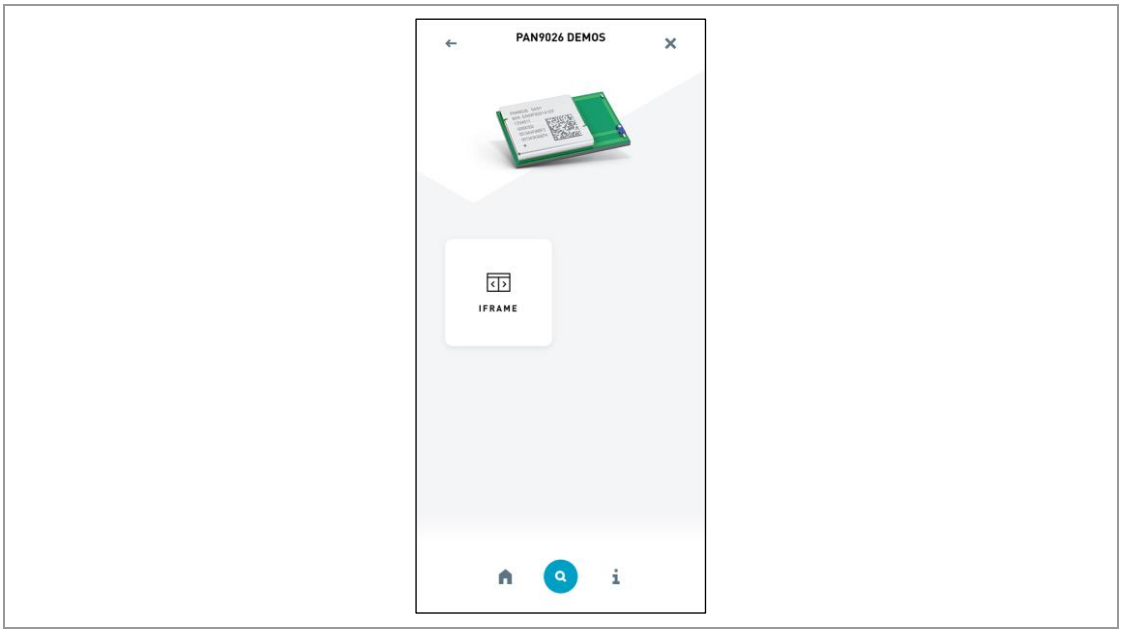
Setup the PAN9026-IMX like described in the “PAN9026 Quick Start Guide” (Basic Usage) so that it can be used for the demos.

5.3 Software Preparation

The PAN9026-IMX needs to be setup. For detailed instructions how to setup the PAN9026-IMX, please refer to the “PAN9026 Quick Start Guide” (Basic Usage).

5.4 Demo: IFrame

The demo can be started individually from the demo section.

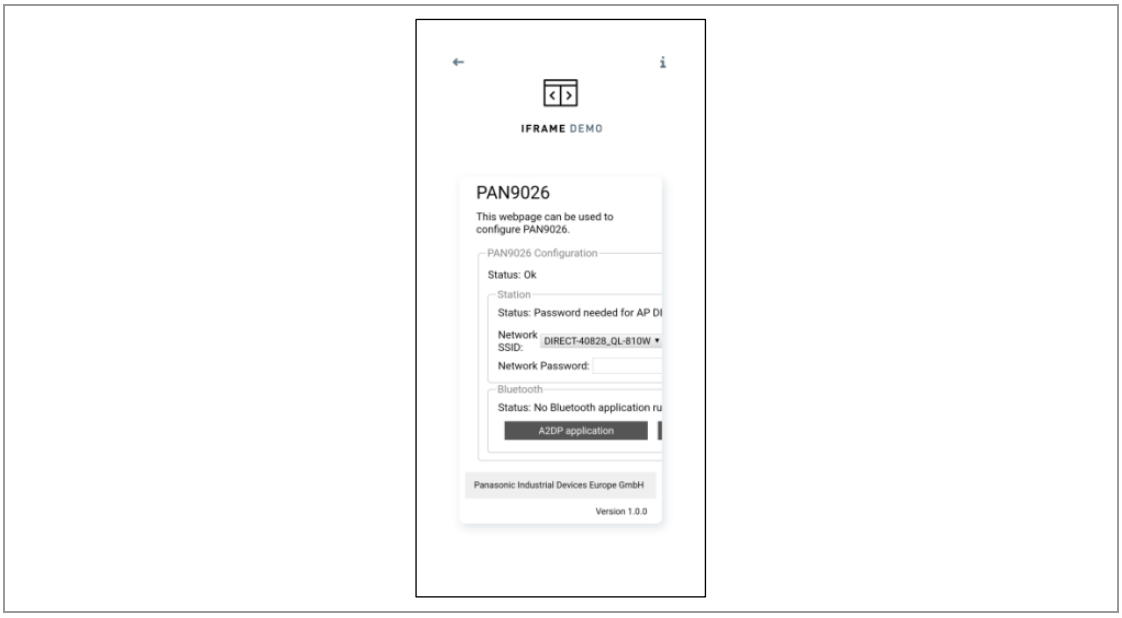


The default software running on the PAN9026-IMX provides access to the Wi-Fi and Bluetooth features of the PAN9026 module by supplying a web server running on a Wi-Fi access point.

After a connection to that access point is established, it is possible to interact with the PAN9026 module (with the browser).

1. Connect to the access point as described in the “PAN9026 Quick Start Guide” (Connecting to the Access Point).
2. Start the demo **IFrame** from the PAN9026 demo section.
   ➔ The output of the web server will be shown within the application “Connected by Panasonic Industry”.

The functionality can be explored as explained in the “PAN9026 Quick Start Guide” (Remote Controlling the PAN9026-IMX).



6 Contact Details

6.1 Contact Us

Please contact your local Panasonic Sales office for details on additional product options and services:

For Panasonic Sales assistance in the **EU**, visit

https://eu.industrial.panasonic.com/about-us/contact-us

Email: wireless@eu.panasonic.com

For Panasonic Sales assistance in **North America**, visit the Panasonic website "Sales & Support" to find assistance near you at

https://na.industrial.panasonic.com/distributors

Please visit the **Panasonic Wireless Technical Forum** to submit a question at

https://forum.na.industrial.panasonic.com

6.2 Product Information

Please refer to the Panasonic Wireless Connectivity website for further information on our products and related documents:

For complete Panasonic product details in the **EU**, visit

http://pideu.panasonic.de/products/wireless-modules.html

For complete Panasonic product details in **North America**, visit

http://www.panasonic.com/rfmodules