

How to Use the ADI RapidNet IP ESL Demonstration Kit

DEMONSTRATION KIT CONTENTS

ESL sensor node, 6LN:

MCU-Cog ([EV-COG-AD3029LZ](#))

RF-Cog ([EV-COG-ADF7023-9Z](#))

EPD-Gear ([EV-GEAR-EINK1Z](#))

CR2450 batteries to be inserted in the sensor node

ESL dongle, 6LBR ([EV-DNG-RFMOD-9001Z](#) USB dongle)

DOCUMENTS NEEDED

[ADI RapidNet IP web page](#)

SOFTWARE NEEDED

[ADI RapidNet IP protocol software](#)

[ADI RapidNet IP API guide](#)

GENERAL DESCRIPTION

Analog Devices, Inc., provides hardware, software, and associated documents as part of the electronic shelf label (ESL) demonstration kit.

The demonstration kit can be ordered from <https://www.analog.com/RapidNet-IP>.

The ESL demonstration kit contains two main parts:

- The ESL sensor node, 6LN, which contains four different parts connected together, as follows:
 - MCU-Cog: [EV-COG-AD3029LZ](#) evaluation board.
 - RF-Cog: [EV-COG-ADF7023-9Z](#) evaluation board.
 - EPD-Gear: [EV-GEAR-EINK1Z](#) evaluation board.
 - CR2532 batteries to be inserted into sensor node.
- ESL dongle, 6LBR ([EV-DNG-RFMOD-9001Z](#) USB dongle).

The ADI RapidNet IP protocol software (binary version) can be downloaded and installed using the following link: www.analog.com/RapidNet-IP.

The ADI RapidNet IP application programming interface (API) guide, which is part of the software package, describes the usage of the software from point of view of the developer.

EPD-Gear is not seen in the kit image because it is connected to the secondary side of MCU-Cog.

All the parts of the sensor nodes are attached in the ESL demonstration kit. The user only needs to insert the batteries.

EVALUATION KIT DIAGRAM

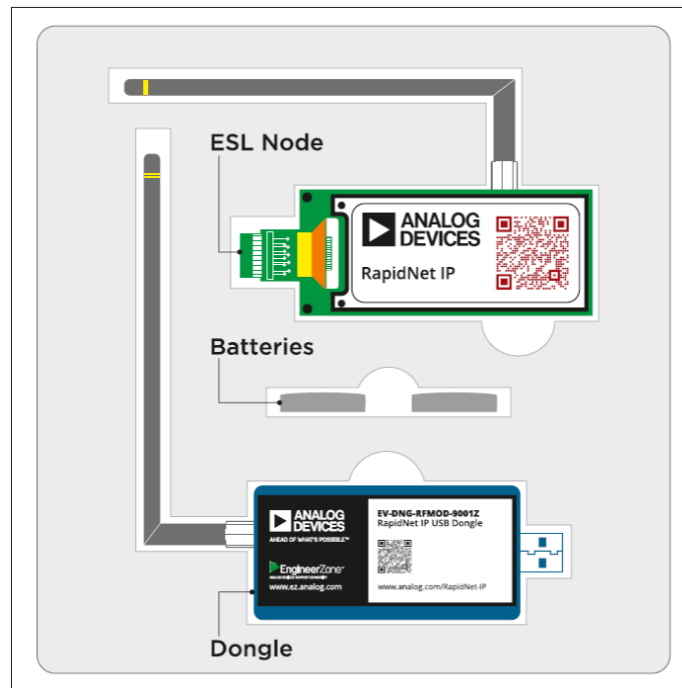


Figure 1.

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REVISION HISTORY

1/2019—Revision 0: Initial Version

DEMONSTRATION SETUP

PREREQUISITES

Prerequisites for using the ADI RapidNet IP network protocol are as follows:

- [EV-RAPID-ESL-900Z/EV-RAPID-ESL-900JZ](#). The ESL demonstration kit includes preflashed binaries and configurations.
- Windows® 10 PC with at least 4 GB of RAM and 2 GB of free disk space.
- ADI RapidNet IP binary installer. Download and install this software package on the Windows machine.

PC SETUP—ENABLING QUEUE SERVICES

To run the ADI RapidNet IP demonstration application, the windows queue services must be enabled using the following steps (see Figure 2):

1. Open the **Control Panel**.
2. Click **Programs** and Features and then click **Turn Windows features on or off**.
3. Expand the Microsoft message queue (MSMQ) server and Microsoft message queue (MSMQ) server core.
4. Select the check boxes for the following queuing features to install:
 - MSMQ active directory domain services integration
 - MSMQ HTTP support
 - MSMQ triggers
 - Multicasting support
 - MSMQ DCOM proxy
5. Click **OK**.
6. If you are prompted to restart the computer, click **OK** to complete the installation.
7. Go to **C:\Windows\System32** and check if **mqrt.dll** file exists. Then, check if the queue service is installed successfully to use the ADI RapidNet IP demonstration application.

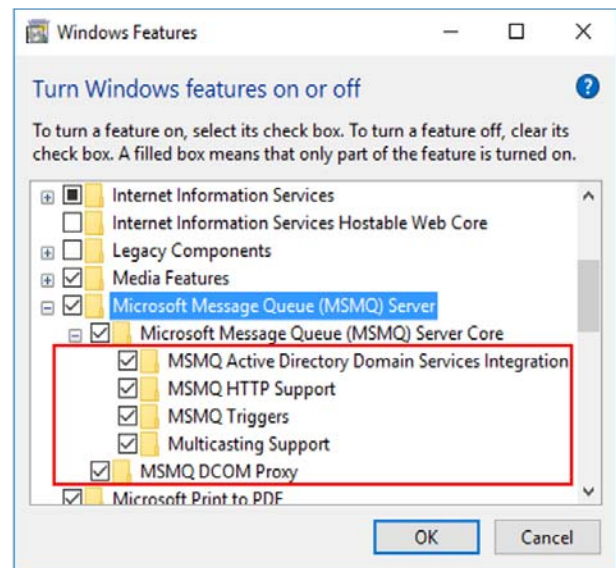


Figure 2. Enabling Queue Services

RUNNING THE ESL DEMONSTRATION 6LBR DONGLE—NETWORK SETUP

To set up and use the 6LBR dongle, use the following procedure:

1. Connect the dongle to a USB port on the PC. A green LED blinks.
2. Open the **RapidNet-IP-Demo_App** application, which is located at `<installation directory>\Analog Devices\RapidNet-IP-Binary-Rel1.1.0\Tools\RapidNet-IP-Demo_App`.
3. Click **Refresh Ports** button to view the connected devices. **EV-DNG-RFMOD-9001Z** appears under **Pick device** section of the demonstration application (see Figure 3).
4. Do not change any configuration. Note that the **Border Router** radio button is selected automatically.
5. Click the **Start Network** button on the demonstration application.

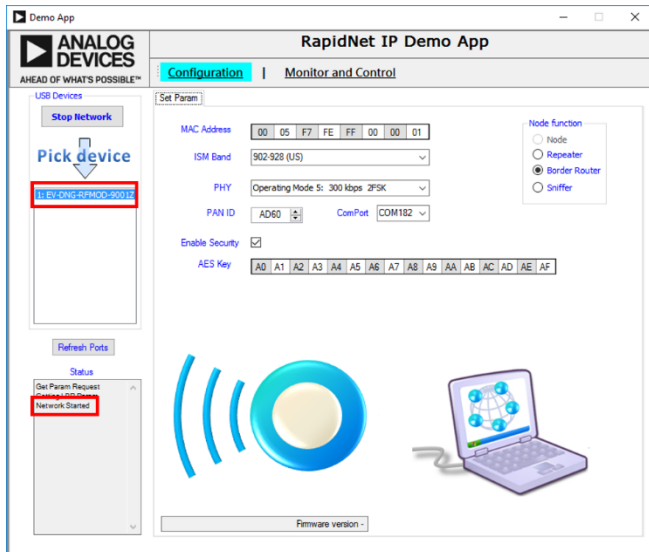


Figure 3. Starting the Network

The **Network Started** message confirms that the ADI RapidNet IP network started successfully and is waiting for the node to join (see Figure 3).

6LN NODE—JOINING THE NETWORK

Ensure that the 6LBR dongle is set up and running successfully before using the following procedure to set up the 6LN node:

1. Insert the two batteries in the node as shown in Figure 4.

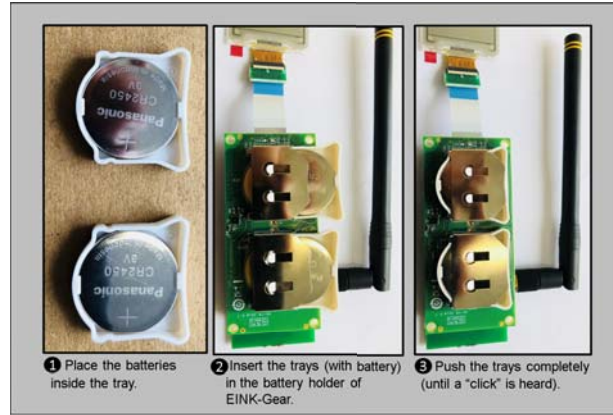


Figure 4. Battery Placement

2. Toggle the power selection switch towards **RF-Cog** as shown in Figure 5. The active LED (yellow) on the cog turns on until the node joins the network. The LED is turned off as soon as the node joins the network.

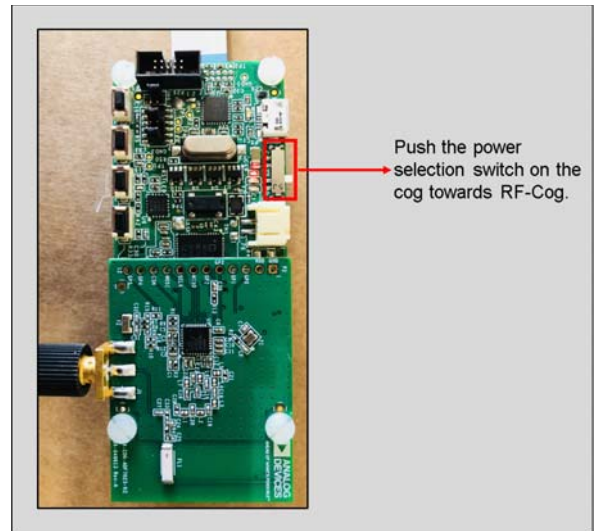


Figure 5. Toggling the Switch

- Open the demonstration application running on the PC (on which the dongle is connected) and go to **Monitor and Control**. The connected node is visible as shown in Figure 6.

ADI RAPIDNET IP—EPD IMAGE UPDATE

Complete the procedure described in the 6LN Node—Joining the Network section before using the following procedure to update the EPD image:

- Go to the **Monitor and Control > Devices in Network** tab and click the **Upload** button next to the desired node (see Figure 6). Choose the image from one of the sample images present in <installation directory>\Analog

2. Select **2.9” Display** when prompted to select the display resolution and click **OK**.
3. The image on the node updates within the next 15 sec to 20 sec.

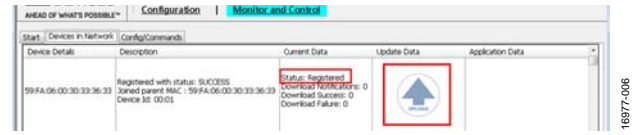


Figure 6. Monitor and Control



ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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