

RapID Platform Network Interface

EVALUATION KIT CONTENTS

Network interface baseboard
UART personality module
Parallel interface personality module
Ethernet personality module
Power supply with outlet adapters
Ethernet cable
USB cable
Innovasic developer portal information card

DOCUMENTS NEEDED

Protocol specific user guide

ADDITIONAL HARDWARE REQUIRED

RapID-NI-V2007, RapID-NI-V2008, RapID-NI-V2009, RapID-NI-V2010, RapID-NI-V2011, or RapID-NI-V2012 module

ADDITIONAL SOFTWARE REQUIRED

NI_TEST_IO host processor simulator, available for download from the [Developer Portal](#)

GENERAL DESCRIPTION

The RapID™ Platform network interface solutions are pretested, industrial network interfaces that manage the industrial protocol and network traffic. The unified interface of the module allows a single host interface hardware, and the software design supports PROFINET®, PROFINET IRT, PROFIBUS®, EtherNet/IP, EtherNet/IP with device level ring (DLR), EtherCAT, and ModbusTCP. Choose the type of network interface to support the required industrial protocols. The unified interface ensures that the host processor hardware or software interface does not need to change, even when the user switches or updates protocols. The network interface connects to a host processor via a UART, 16-bit parallel interface, or Ethernet cable.

The evaluation kit provides a quick assessment for interfacing a host processor to the network interface module (sold separately). When the host side communication is established, use third party PC-based tools or vendor specific programmable logic controllers (PLC) to evaluate the communication. The communication path between the host processor and a PLC can be completely verified before integrating the network interface into the end field device.

The RAPID-NIEK-V0004 evaluation kit provides an end to end evaluation of the communication path from the host processor to the PLC. This user guide describes how to use the evaluation kit to set up and run a host simulator example (see the corresponding protocol specific user guide for full details). The application example demonstrates the host communication example that ultimately leads to an end to end communication from a host processor to a PLC. For the example described in this user guide, the host processor is a PC and communicates to the network interface via USB. Communication to the PLC is described on a protocol by protocol basis in the protocol specific user guide.

After running the application example, the user can refer to the protocol specific quickstart guide for an example of the network communication. The evaluation kit and protocol specific user guide must be used in conjunction with the [Design Integration Guide](#) to develop field device products, available for download from the [Developer Portal](#).

Figure 2 shows an overview of the evaluation and development process. For full details on the completion of a field device design using the network interface, see the [Design Integration Guide](#).

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REVISION HISTORY

2/2019—Revision 0: Initial Version

EVALUATION KIT OVERVIEW

Figure 1 and Figure 2 show the contents of the evaluation kit and an overview of the evaluation development process, respectively.



Figure 1. Evaluation Kit Contents

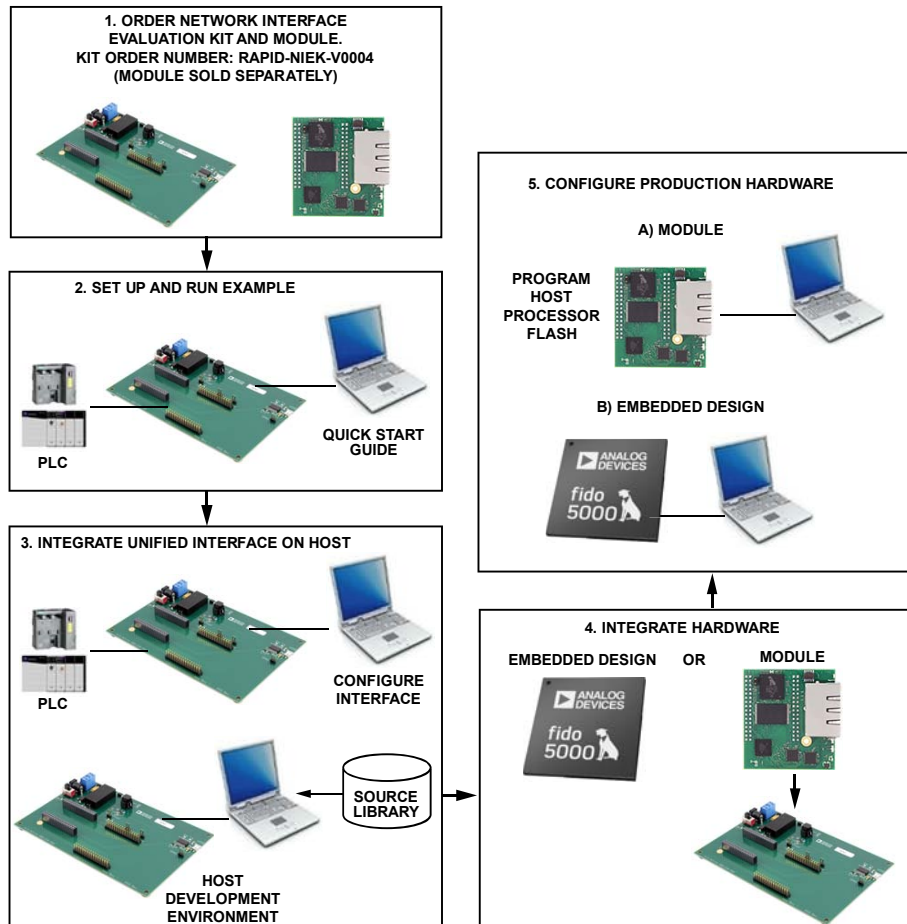


Figure 2. Evaluation and Development Overview

EVALUATION BOARD HARDWARE

This section describes how to connect the hardware provided in the evaluation kit. The following steps use a PC with USB as a host processor and a PLC with an EtherNet/IP industrial Ethernet interface. See the [Developer Portal](#) page on the Analog Devices, Inc., website for a full list of protocol specific user guides.

ELECTROSTATIC DISCHARGE (ESD) AND POWER SUPPLY CONSIDERATIONS

Electrostatic Sensitive Device

Handle the hardware in this evaluation kit in accordance with proper ESD device handling techniques. Use a grounding wrist strap when using this evaluation board prevent accidental damage to the hardware.

POWER SUPPLY AND GROUNDING

A wall adapter power supply is included with the evaluation boards. This supply is 12 V, 1 A, and attaches to the power supply barrel connector. A screw terminal to attaches a lab benchtop power supply. For either type of power supply connection, the input voltage to the board must be in the 9 V to 33 V range.

EVALUATION HARDWARE SETUP

The following steps detail the hardware setup process. Figure 5 shows the completed hardware setup with proper baseboard and module connections. The evaluation kit comes with the jumpers installed and there is no need to set any switches. The UART interface, parallel interface, or Ethernet interface personality modules are not used in this setup procedure.

1. Connect the module to the baseboard as shown in Figure 5.
2. Connect the USB cable from the PC to the baseboard, as shown in Figure 3. This step creates two virtual COM ports on the PC that are used later in the application example.

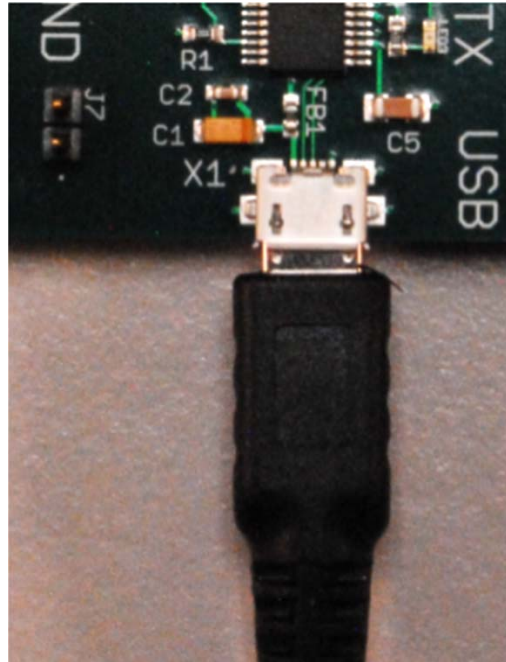


Figure 3. USB Cable Connection

3. Connect the power cable provided in the kit to the power port, as shown in Figure 4. Plug the other end of the power cord into a wall socket.

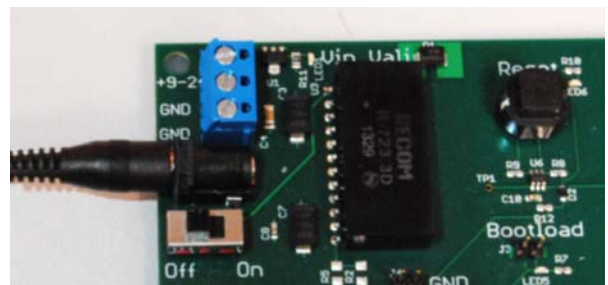


Figure 4. Power Cable Connection

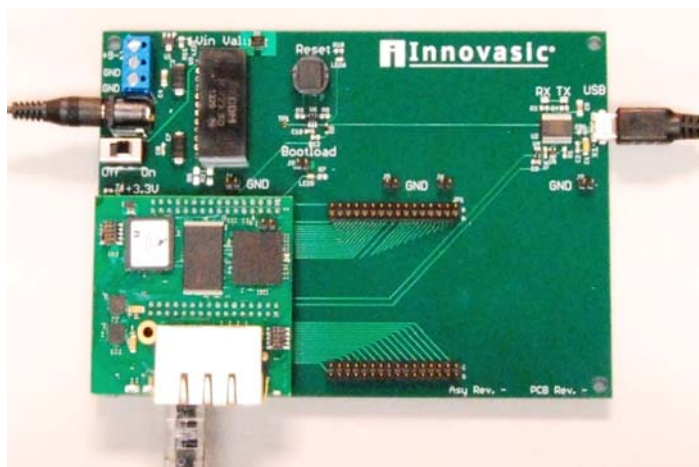


Figure 5. Module and Baseboard Connection

4. Connect one end of the provided Ethernet cable in the kit to either of the RJ45 jacks on the network interface module, as shown in Figure 6. Connect the other end of the Ethernet cable to the PLC, and then connect the PLC to the PC via the Ethernet cable.



Figure 6. Ethernet Cable Connection

5. Apply power to the module by turning the network interface module baseboard power switch to the on position, as shown in Figure 7.



Figure 7. Power-On Switch Location

EVALUATION BOARD SCHEMATICS

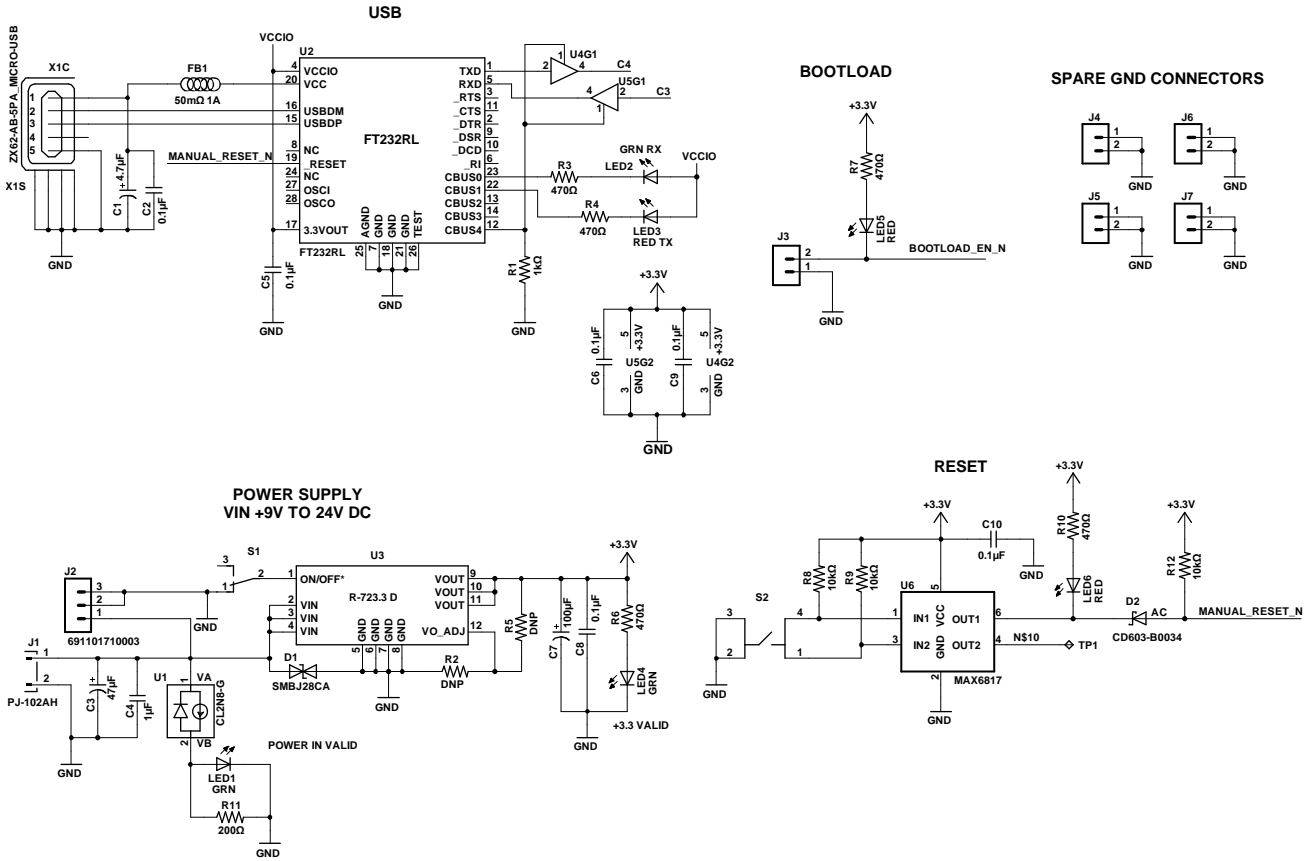


Figure 8. Network Interface Baseboard Schematic

NETWORK INTERFACE BASE BOARD

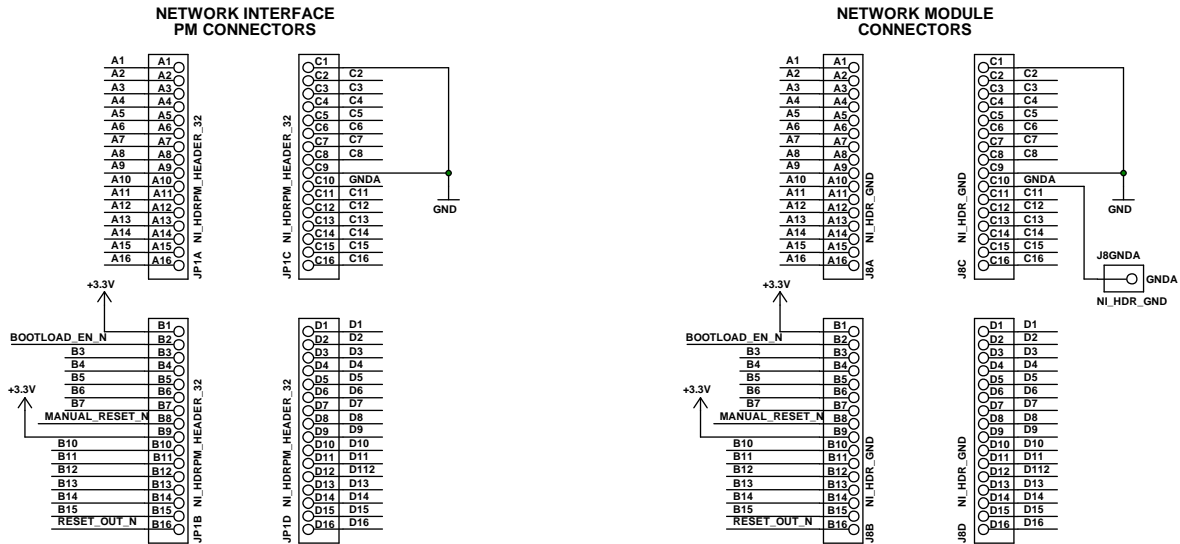


Figure 9. Network Interface Connectors Schematic

NOTES

**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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